

# Zero Bingo!

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# Zero Bingo

## 1 Before you play

Cut out the deck of 32 cards. These cards describe where you might find the real zeros of polynomials of degree three or four (and match, in order, the graphs on the previous page). One person will be designated the caller and the rest will play. Each player should have a bingo card (these can be distributed at random or you can let the players choose theirs). Each player will also need about 20 tokens to mark the squares that have been called (you could use pennies for these). One token should be placed on the “free space.”

## 2 Play

The caller should shuffle the cards, then slowly read out one card at a time. Be sure to give the players enough time to place a token on a corresponding graph (if they have one). Players will be slower than in standard bingo. The players goal is to cover five squares in a row: vertically, horizontally or diagonally. When they have five, they should call out “bingo.” (The first to do so is the winner.) After they call bingo out, check their card to make sure it is correct.

## 3 Standards

This activity addresses the ability to understand the relationship between zeros and factors of polynomials. In the Common Core this is:

**CCSS.MATH.CONTENT.HSA.APR.B.3** Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

In Tennessee the following standards have exactly the same wording.

**A1.A.APR.B.2** with the scope and clarification “Graphing is limited to linear and quadratic polynomials.”

**A2.A.APR.A.2 & M3.A.APR.A.2** with the scope and clarification “Tasks include quadratic, cubic, and quartic polynomials and polynomials for which factors are not provided. For example, find the zeros of  $(x^2 - 1)(x^2 + 1)$ .”

**B.A.APR.B.2** with no scope or clarification.

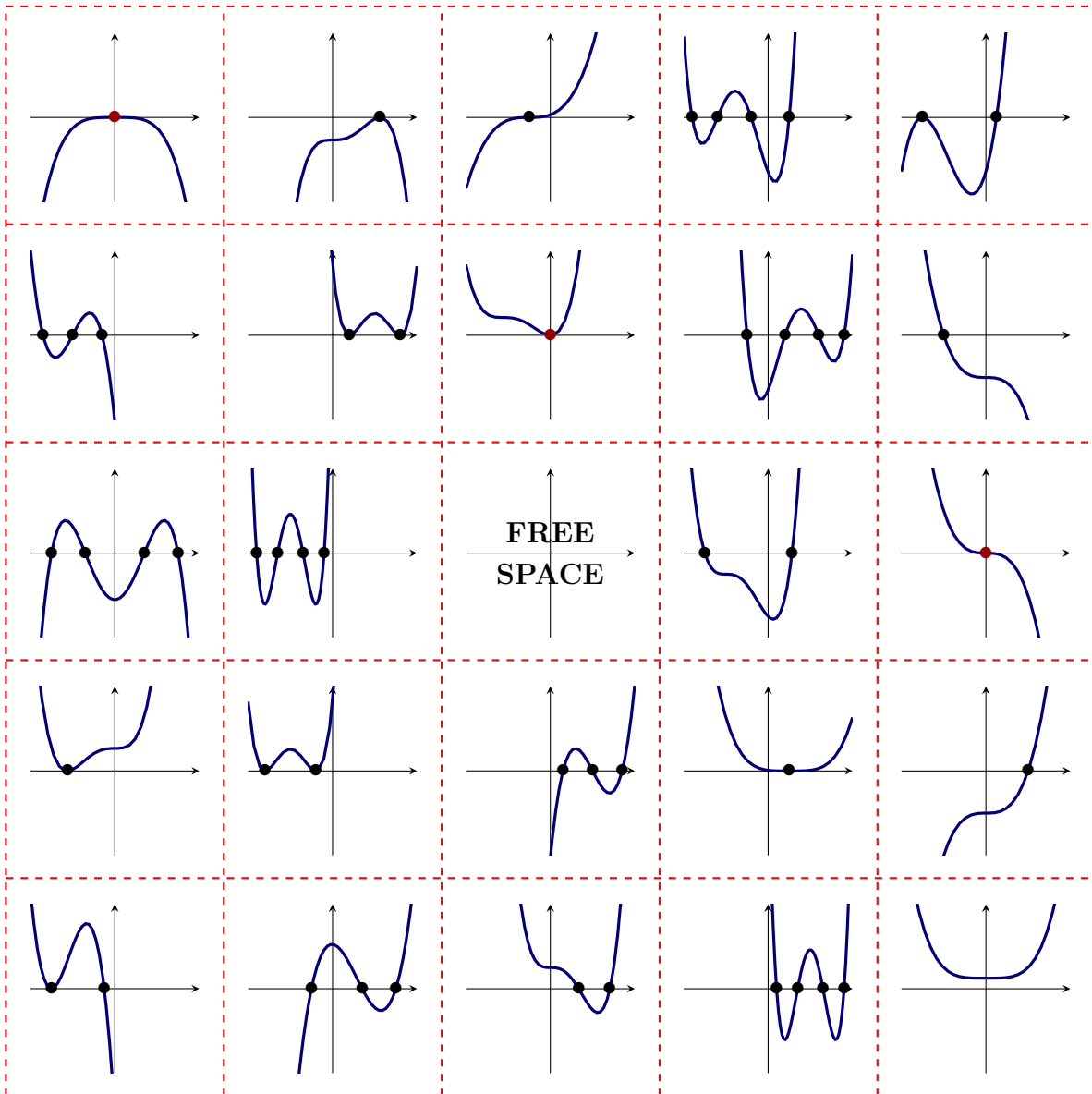
<b>no real zeros</b>	<b>one positive zero</b>
<b>one negative zero</b>	<b>simple zero at the origin</b>
<b>two positive zeros</b>	<b>two negative zeros</b>
<b>one positive &amp; one negative zero</b>	<b>one positive double zero</b>

one negative double zero	double zero at the origin
three positive zeros	three negative zeros
two positive zeros & one negative zero	one positive zero & two negative zeros
positive zero & positive double zero	negative zero & negative double zero

positive zero & negative double zero	negative zero & positive double zero
positive triple zero	triple zero at the origin
negative triple zero	four positive zeros
four negative zeros	two positive zeros & two negative zeros

three positive zeros & one negative zero	three negative zeros & one positive zero
two negative double zeros	two positive double zeros
negative double zero & positive double zero	negative zero with multiplicity four
positive zero with multiplicity four	zero of multiplicity four at the origin

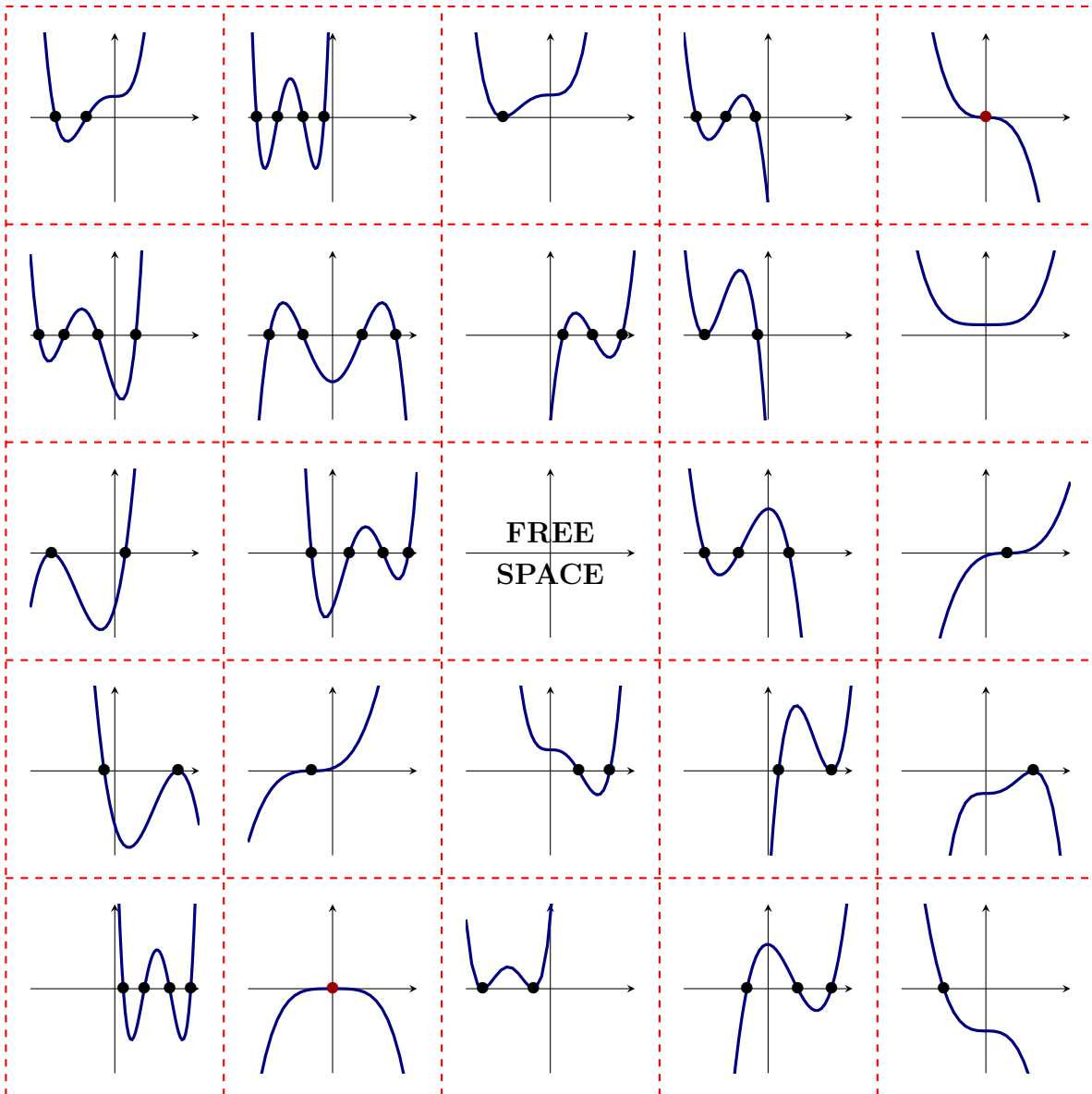
# Zero Bingo Card 1



Each polynomial on this card has degree three or four. All real zeros are shown.

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# Zero Bingo Card 2

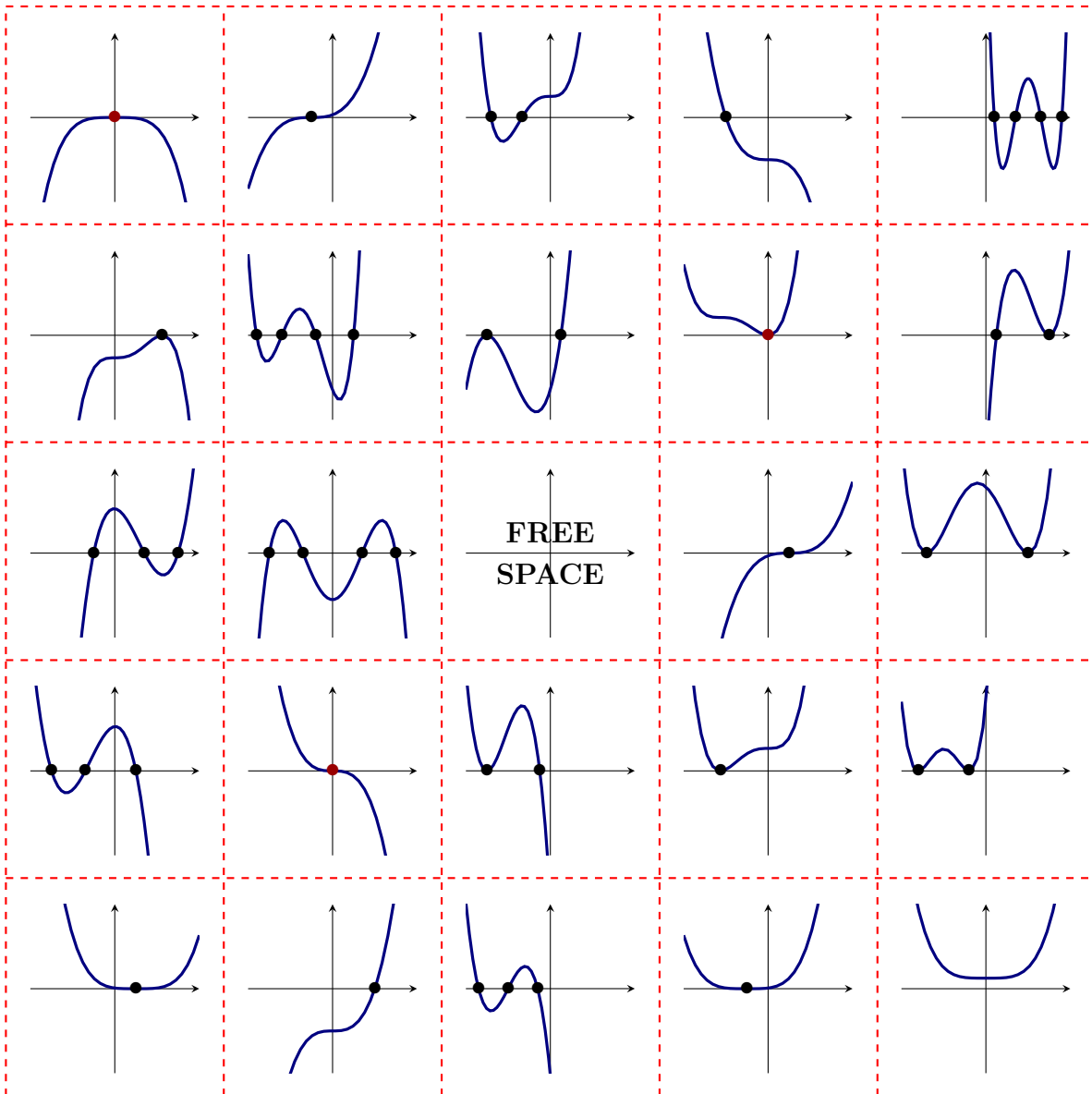


Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016



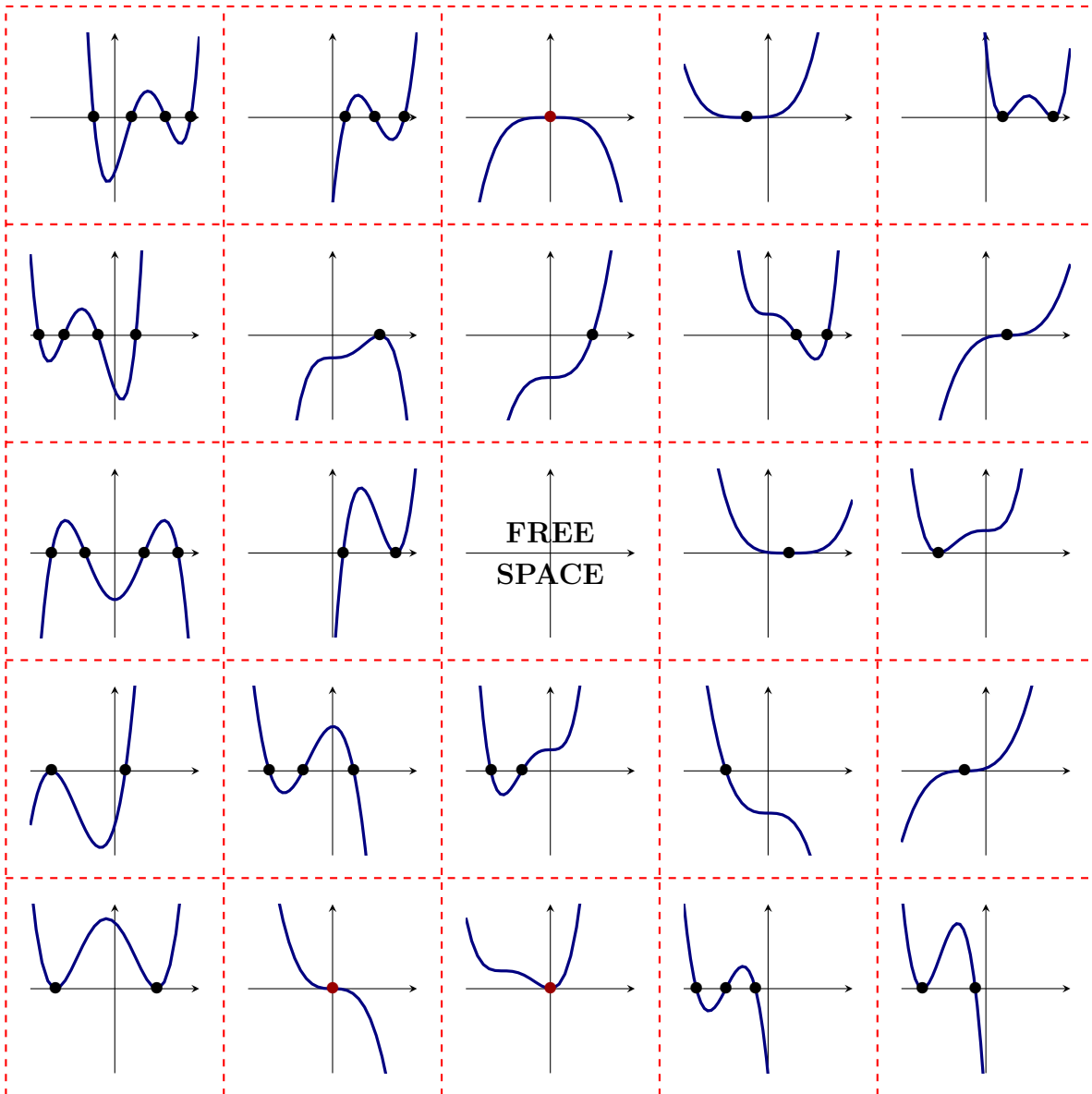
# Zero Bingo Card 3



Each polynomial on this card has degree three or four. All real zeros are shown.

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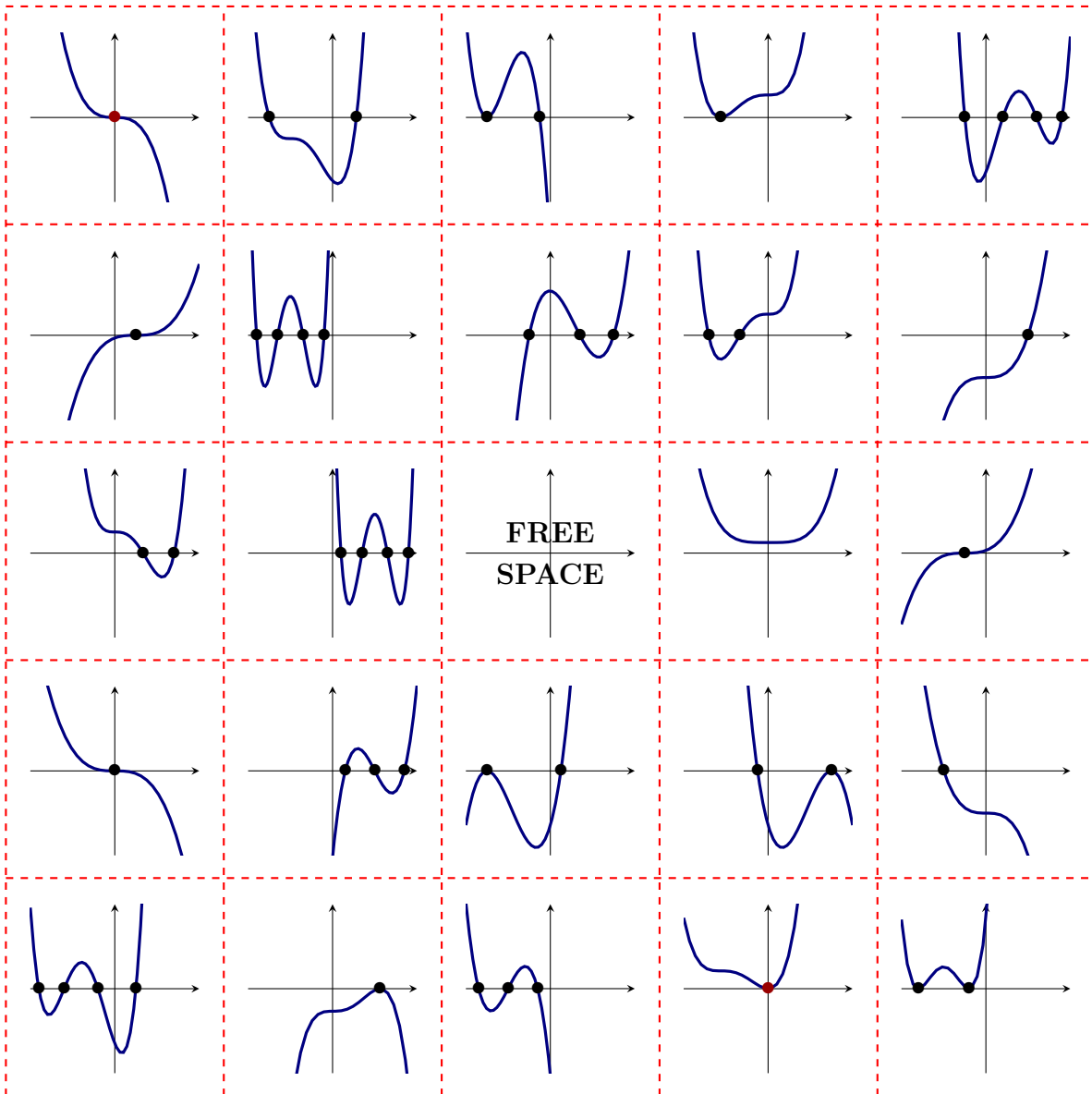
# Zero Bingo Card 4



Each polynomial on this card has degree three or four. All real zeros are shown.

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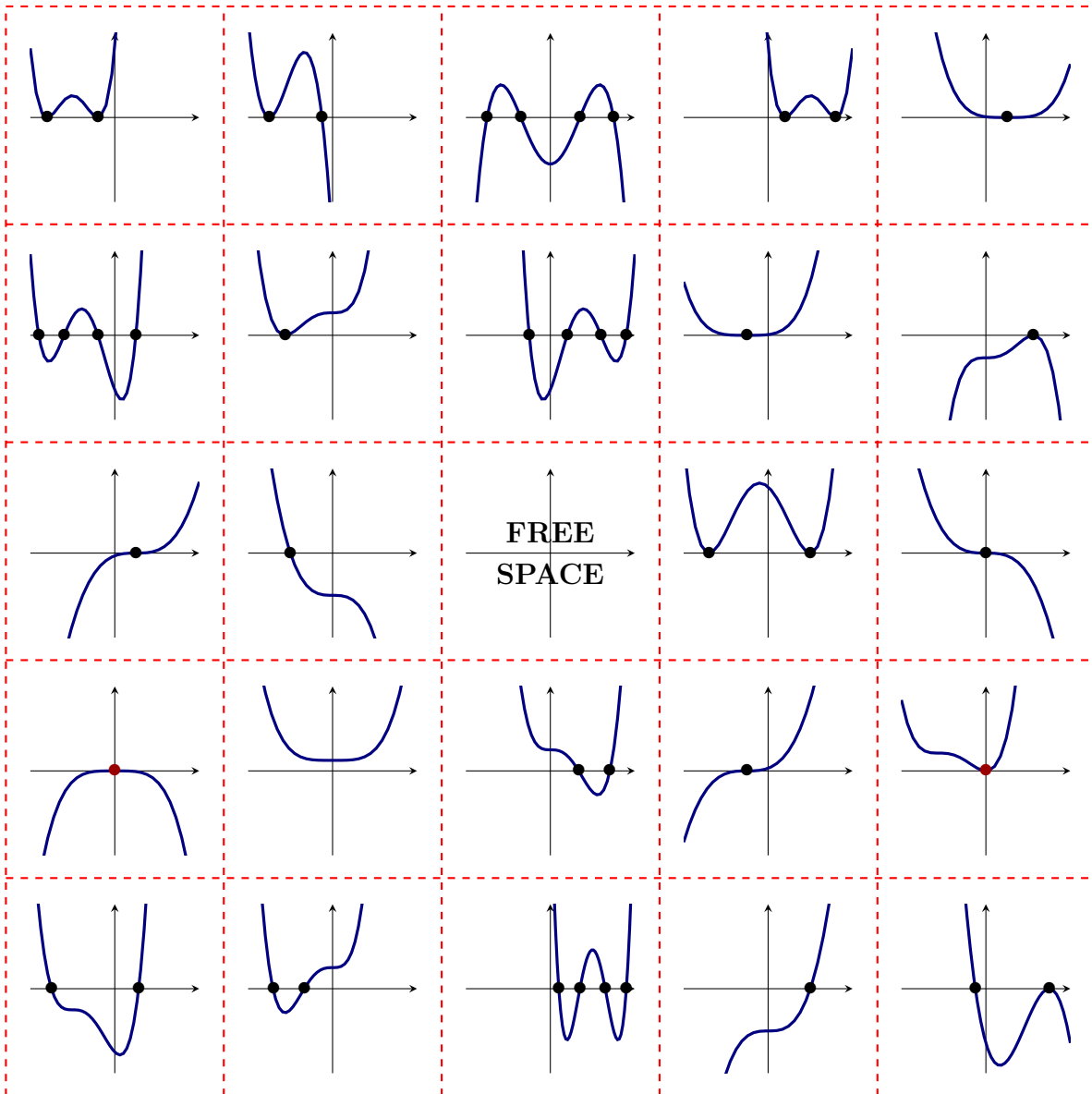
# Zero Bingo Card 5



Each polynomial on this card has degree three or four. All real zeros are shown.

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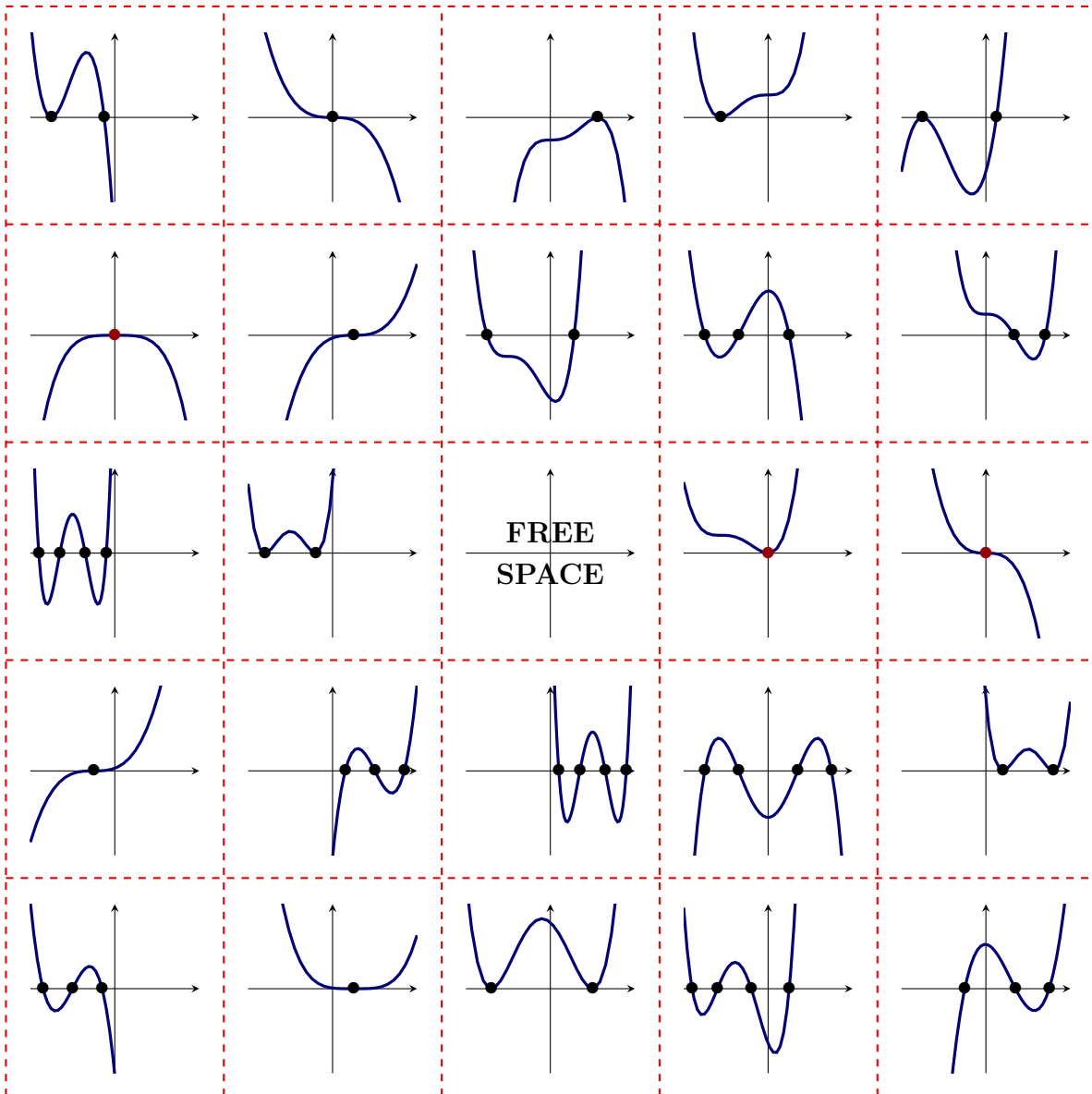
# Zero Bingo Card 6



Each polynomial on this card has degree three or four. All real zeros are shown.

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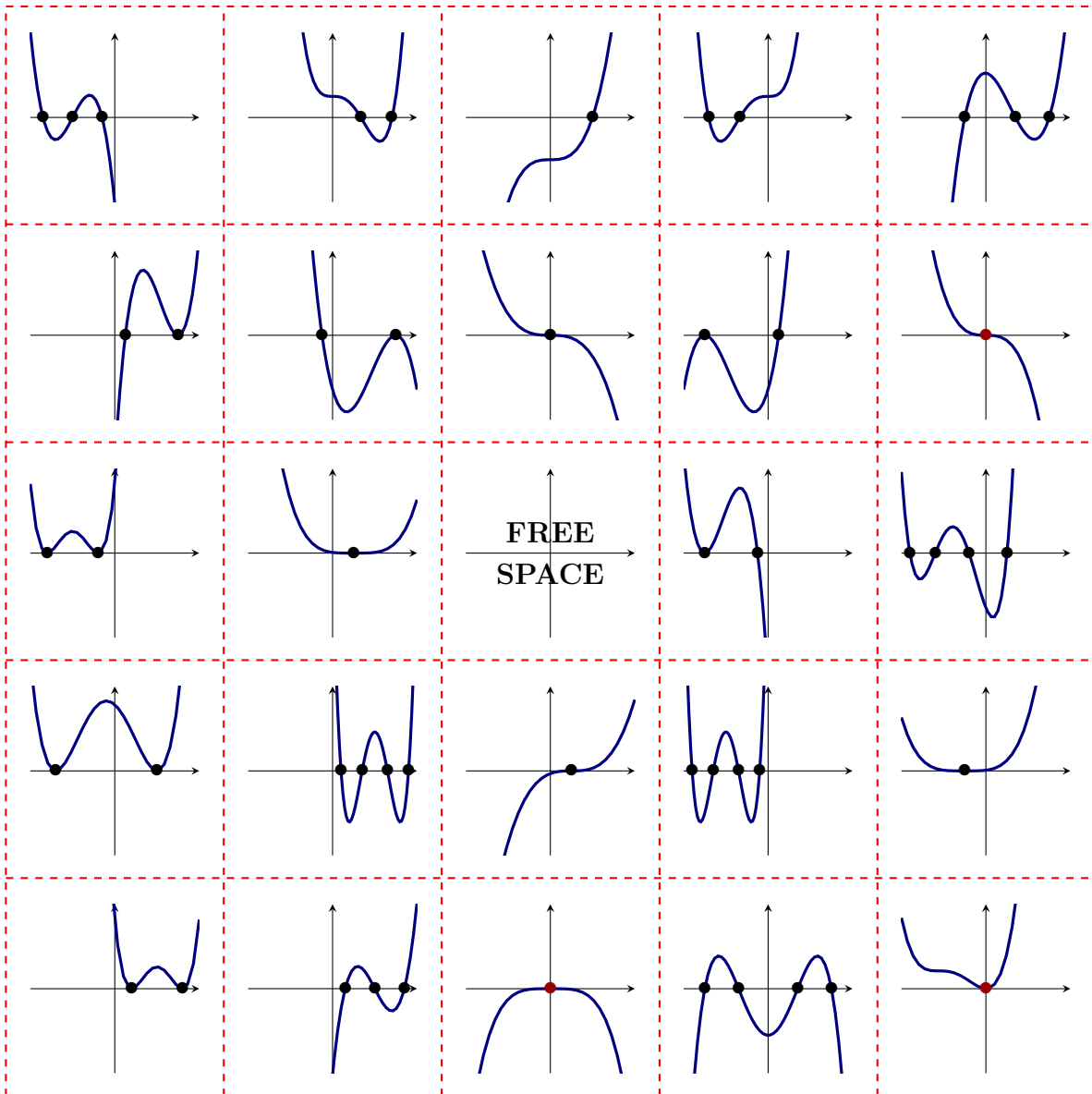
# Zero Bingo Card 7



Each polynomial on this card has degree three or four. All real zeros are shown.

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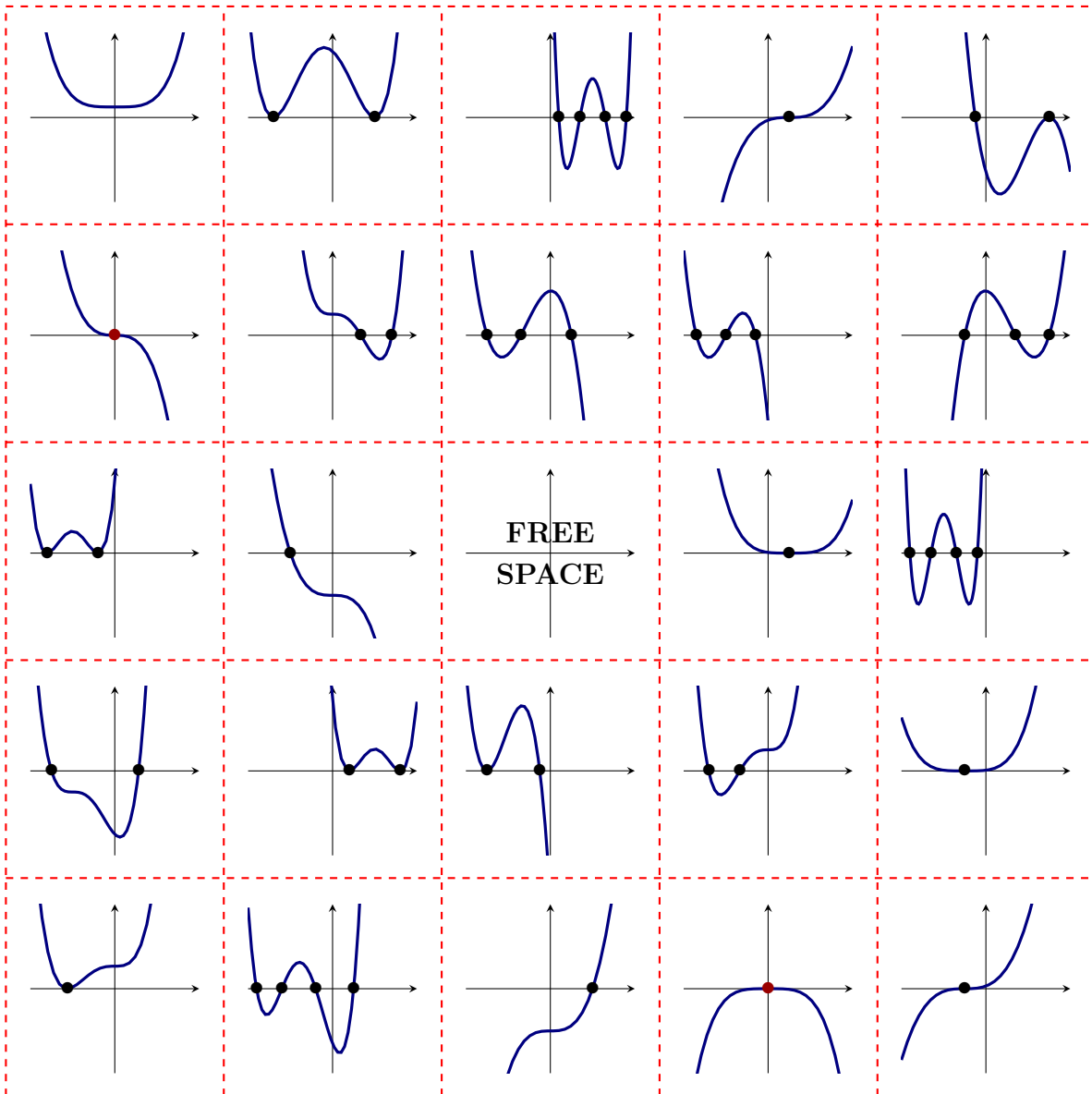
# Zero Bingo Card 8



Each polynomial on this card has degree three or four. All real zeros are shown.

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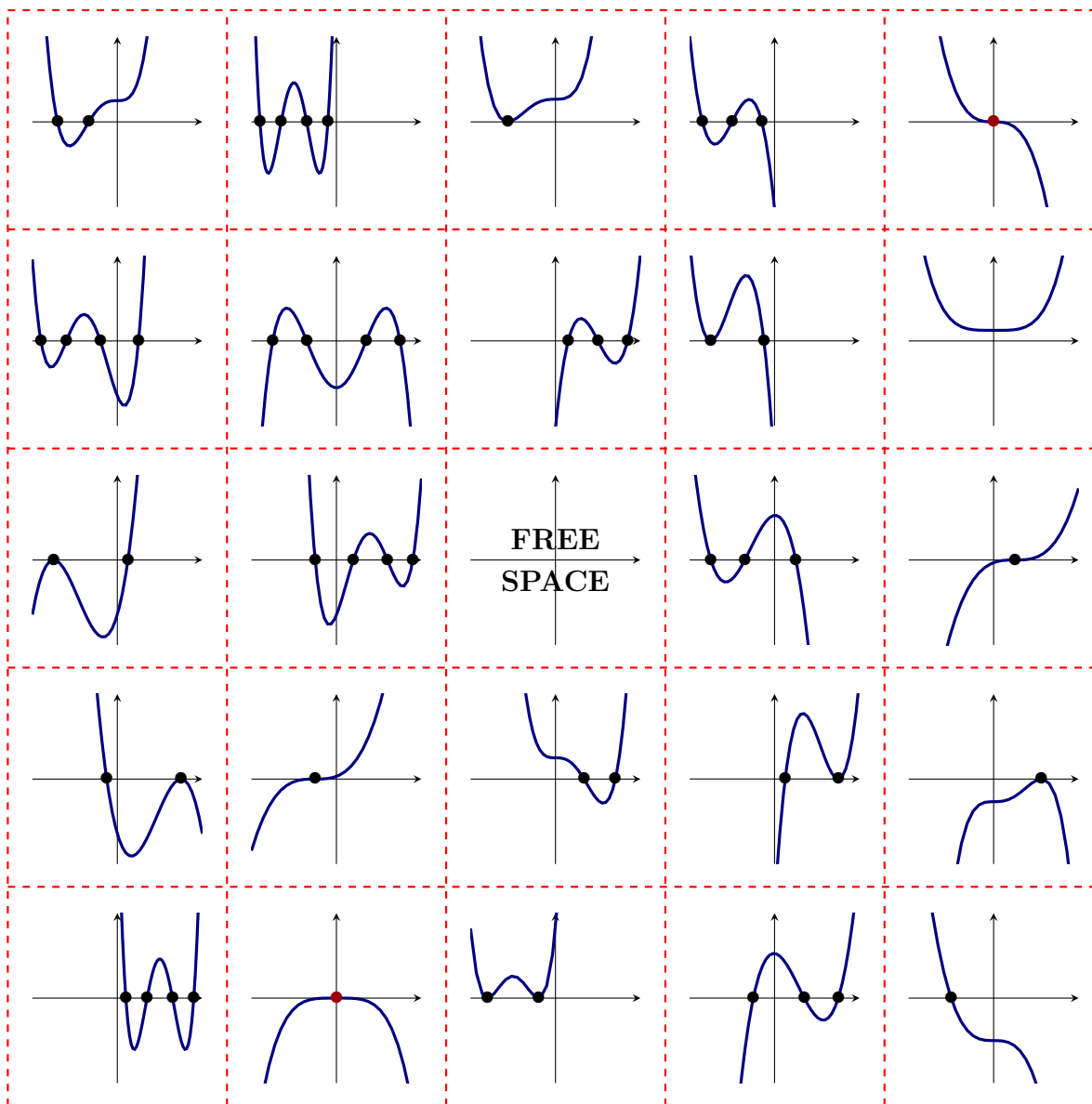
# Zero Bingo Card 9



Each polynomial on this card has degree three or four. All real zeros are shown.

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# Zero Bingo Card 10

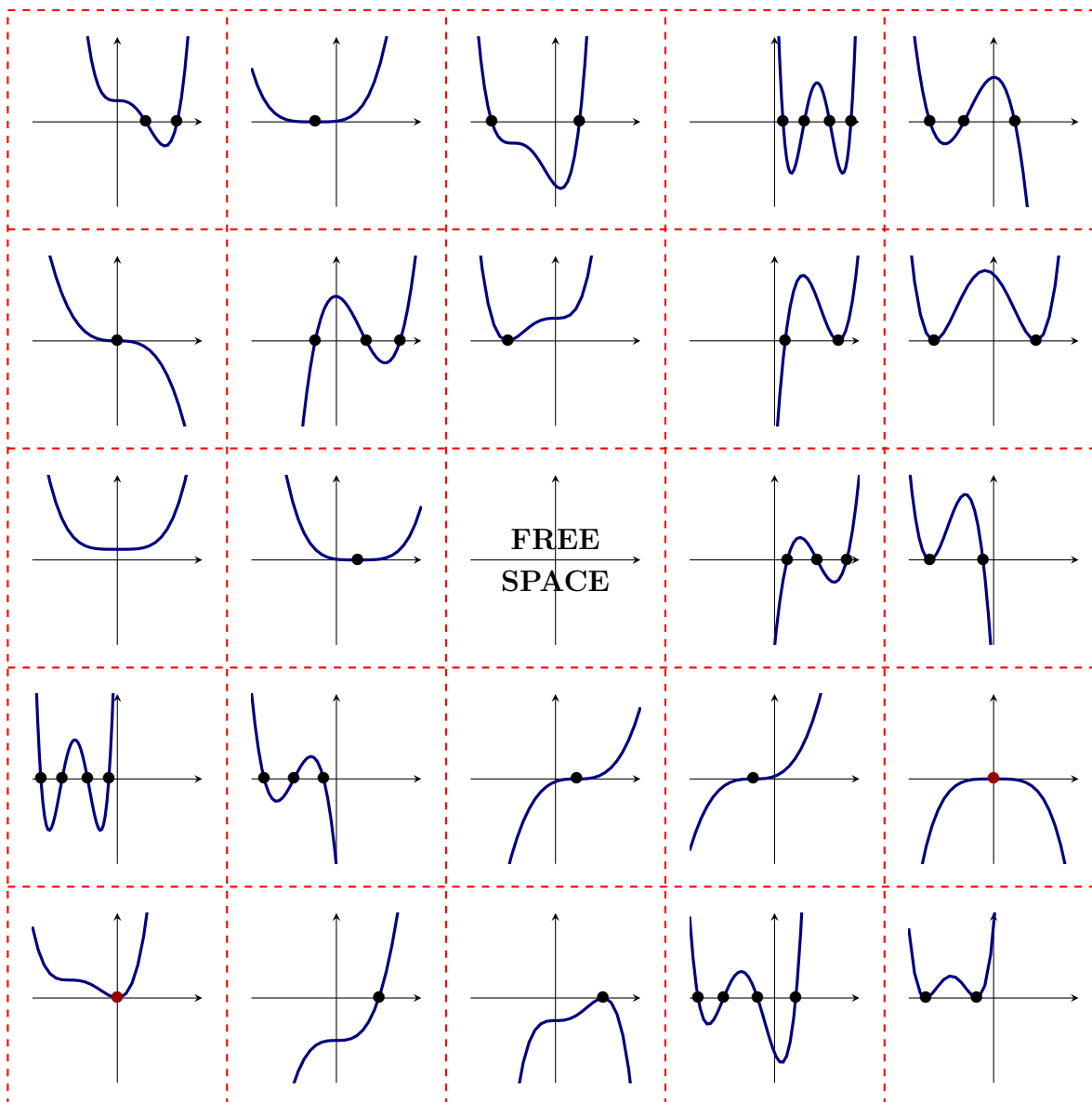


Each polynomial on this card has degree three or four. All real zeros are shown.

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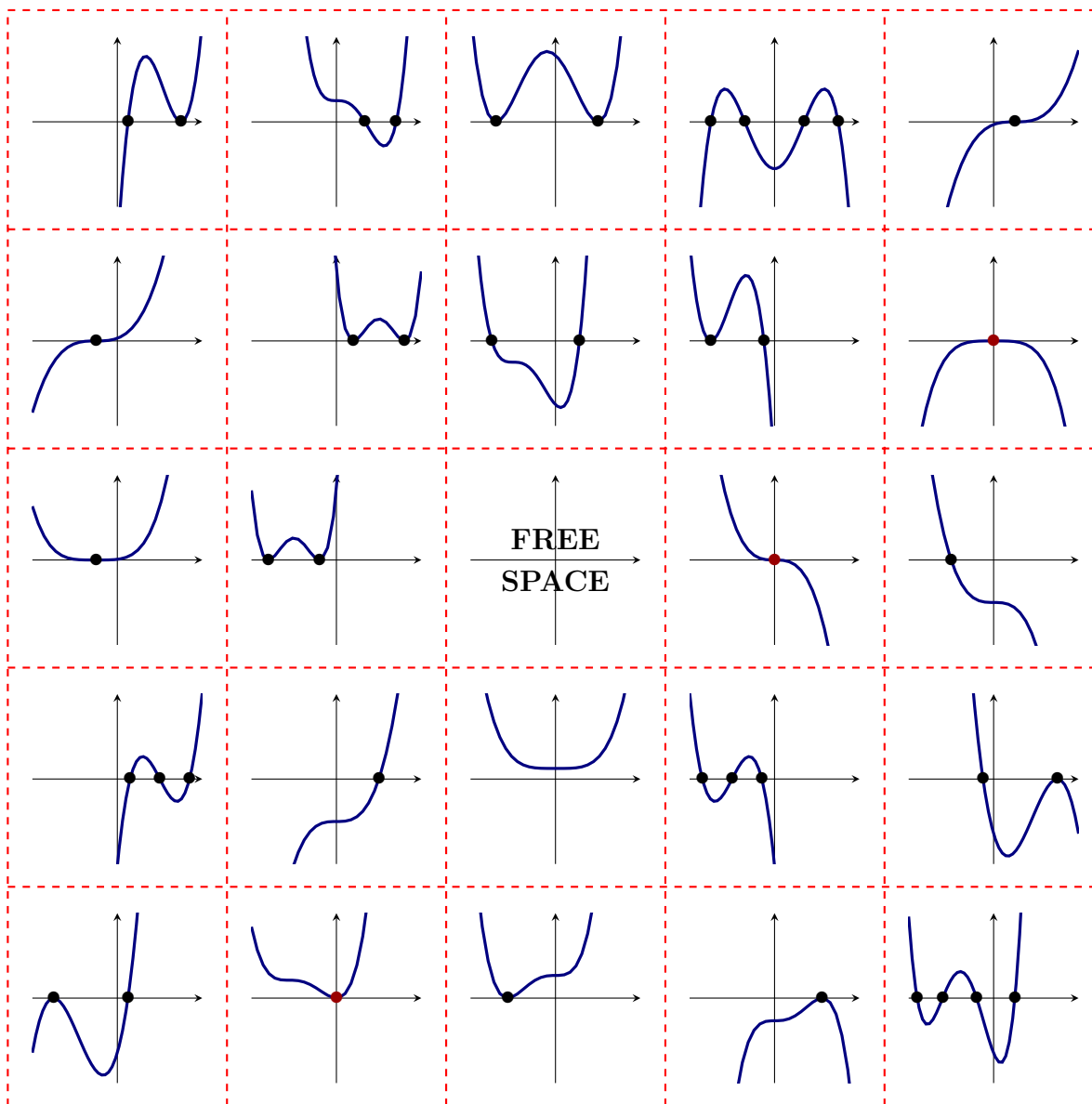
# Zero Bingo Card 11



Each polynomial on this card has degree three or four. All real zeros are shown.

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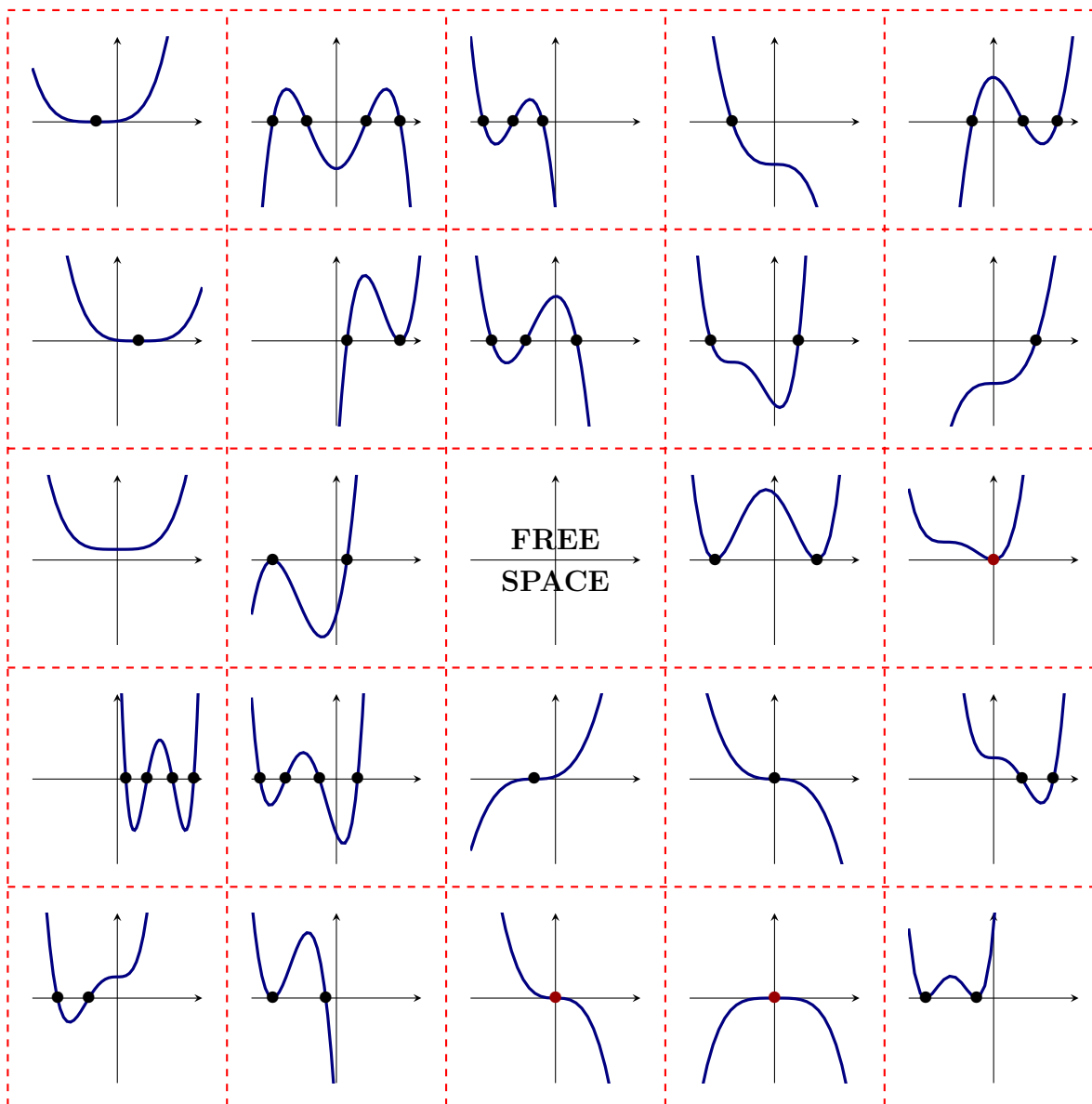
# Zero Bingo Card 12



Each polynomial on this card has degree three or four. All real zeros are shown.

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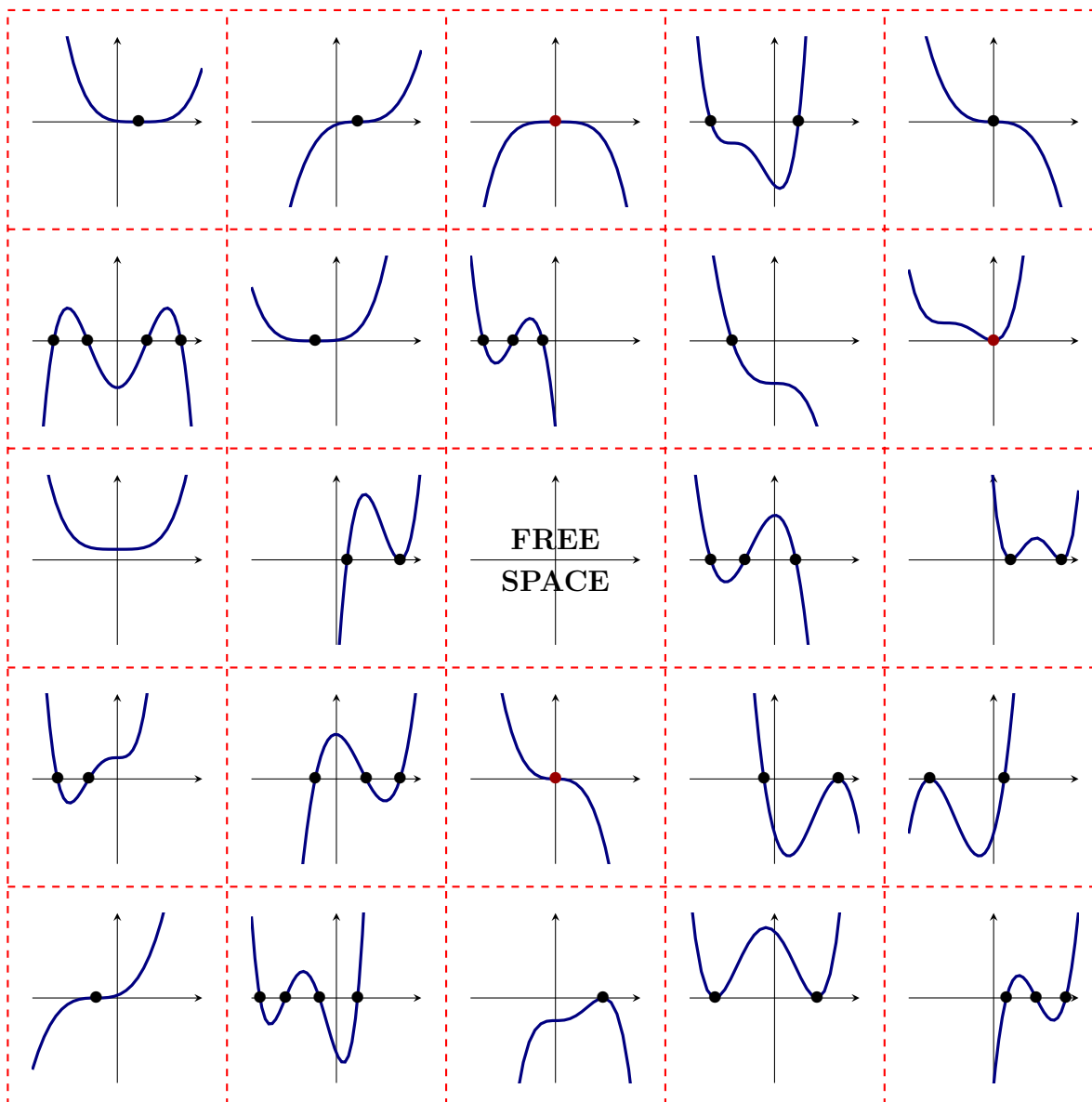
# Zero Bingo Card 13



Each polynomial on this card has degree three or four. All real zeros are shown.

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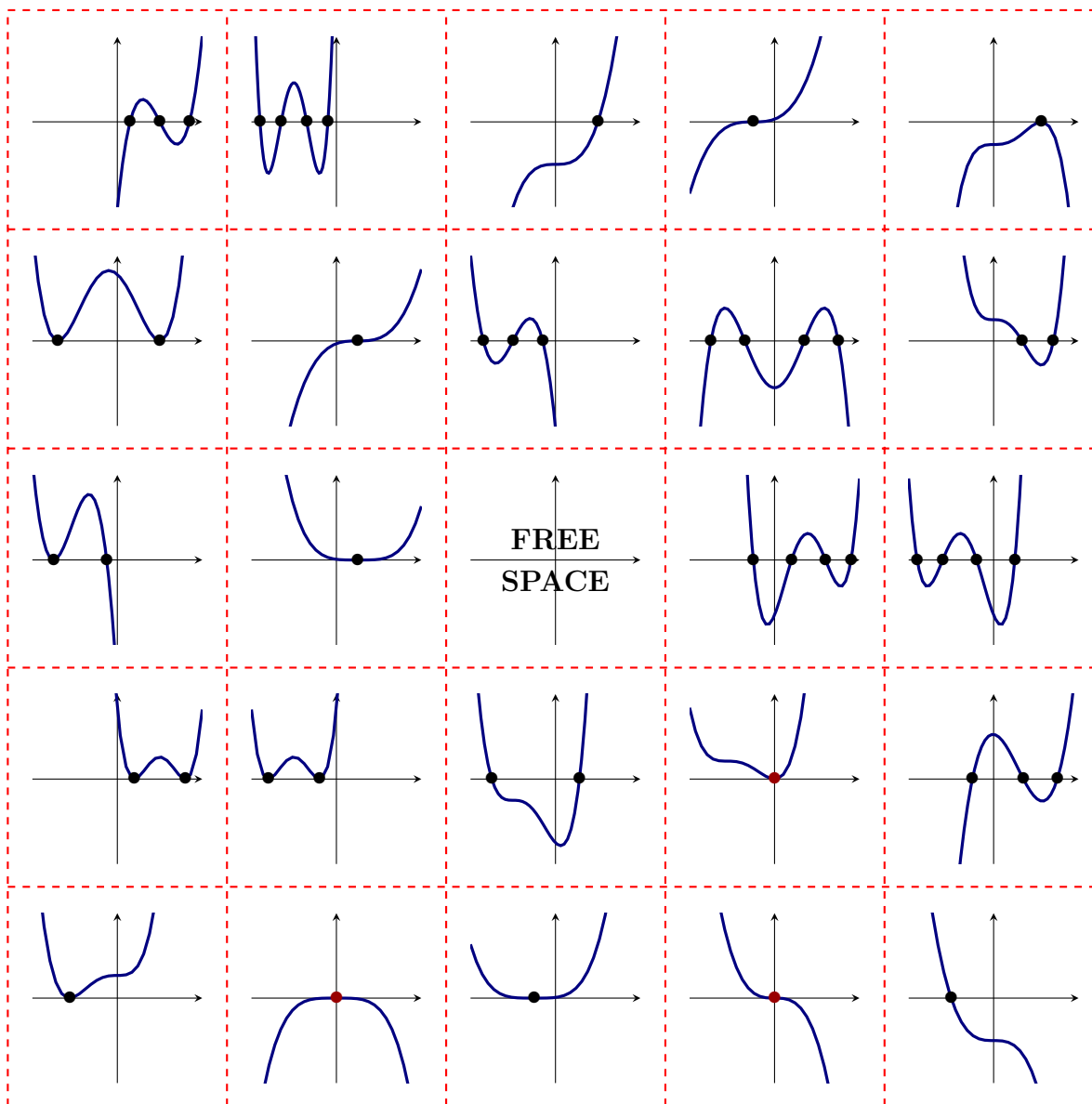
# Zero Bingo Card 14



Each polynomial on this card has degree three or four. All real zeros are shown.

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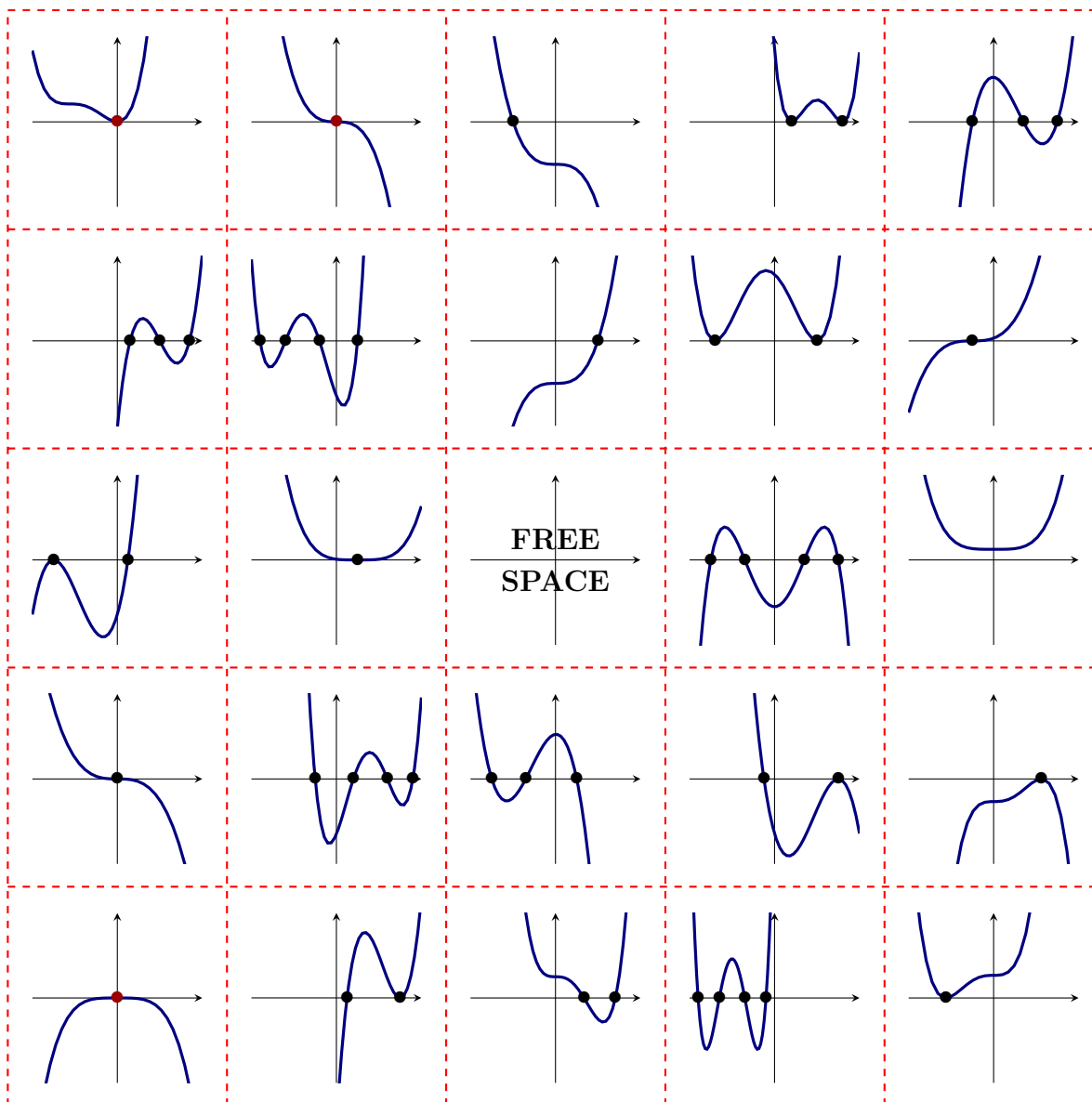
# Zero Bingo Card 15



Each polynomial on this card has degree three or four. All real zeros are shown.

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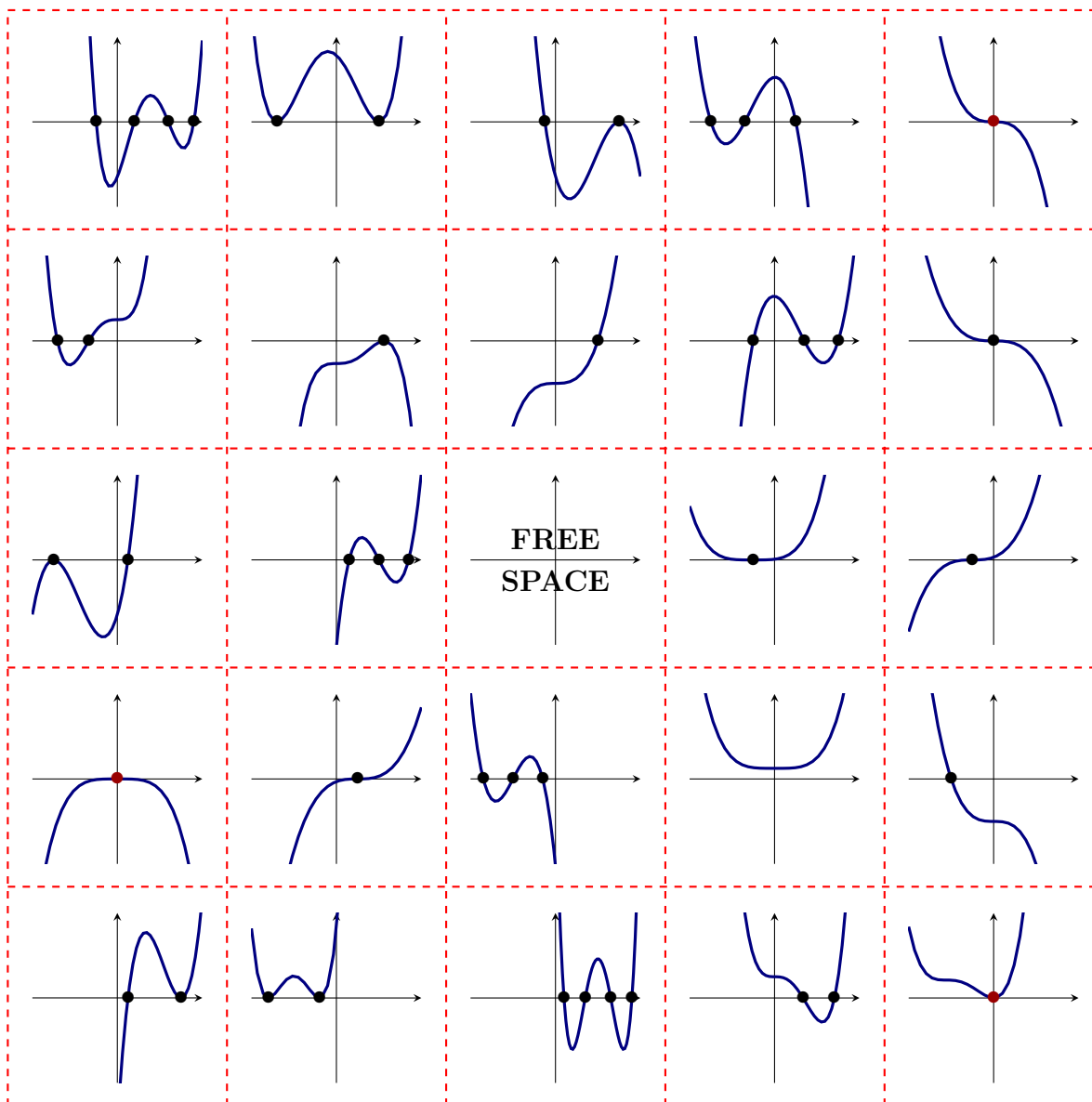
# Zero Bingo Card 16



Each polynomial on this card has degree three or four. All real zeros are shown.

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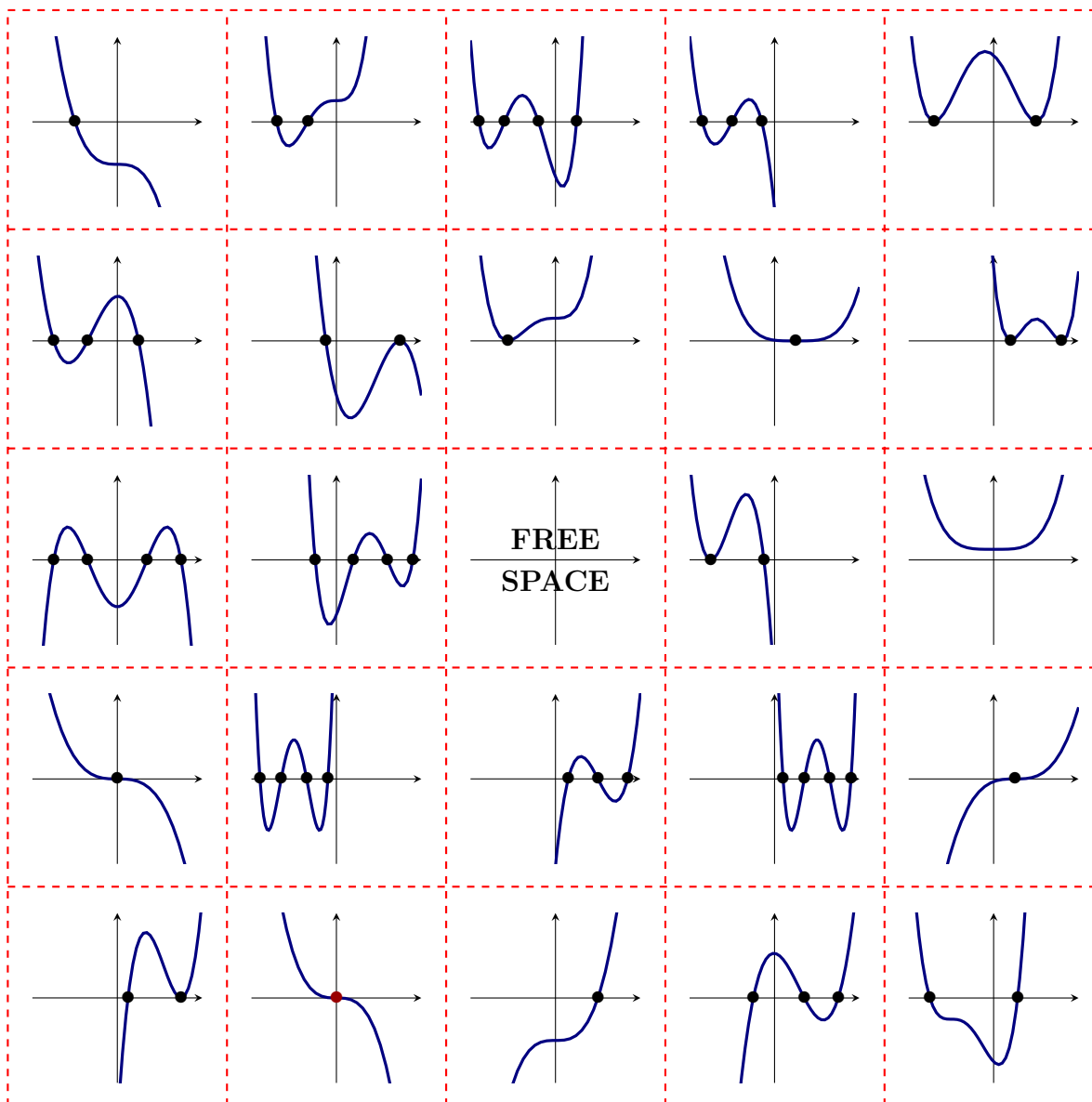
# Zero Bingo Card 17



Each polynomial on this card has degree three or four. All real zeros are shown.

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# Zero Bingo Card 18

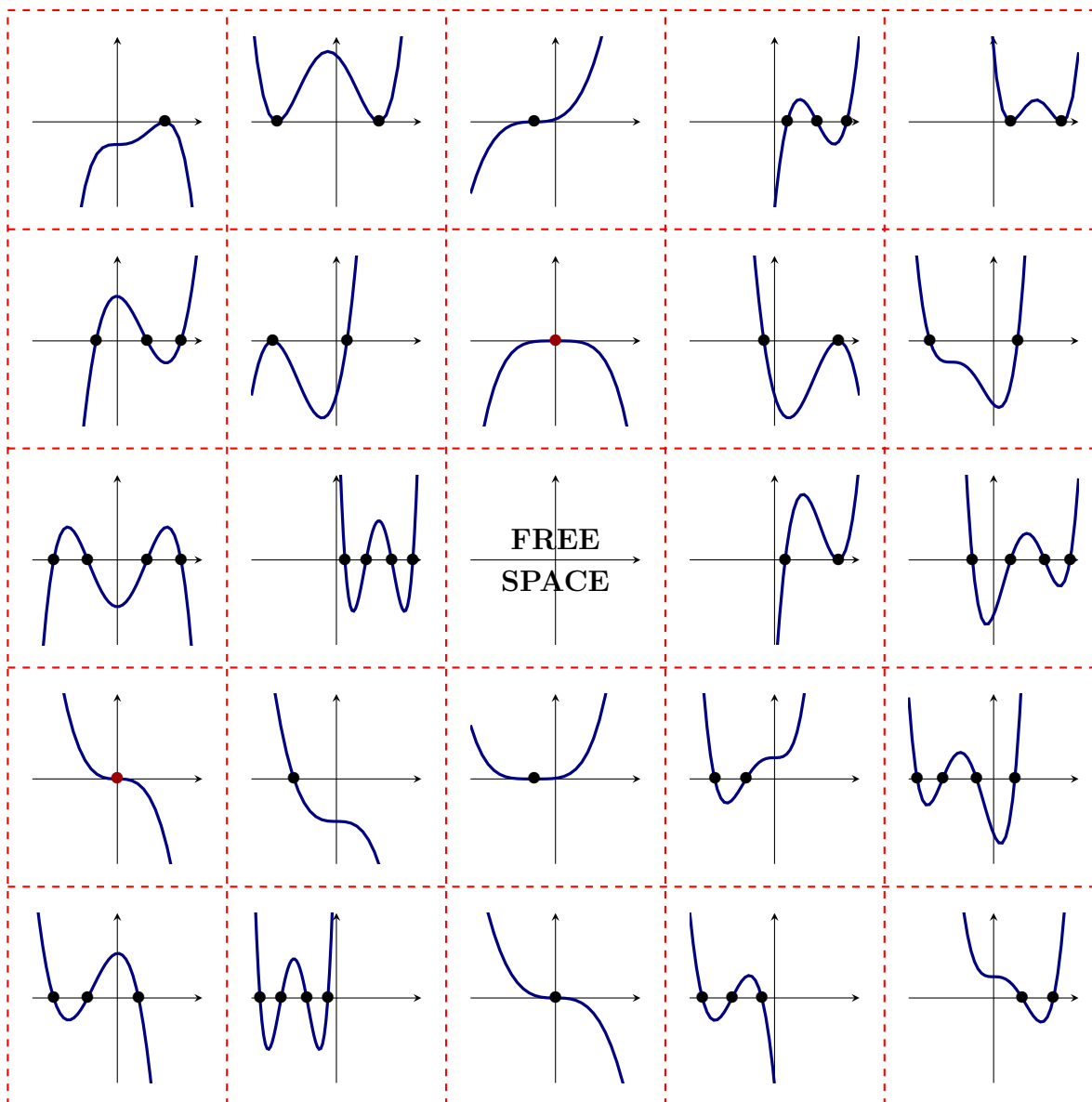


Each polynomial on this card has degree three or four. All real zeros are shown.

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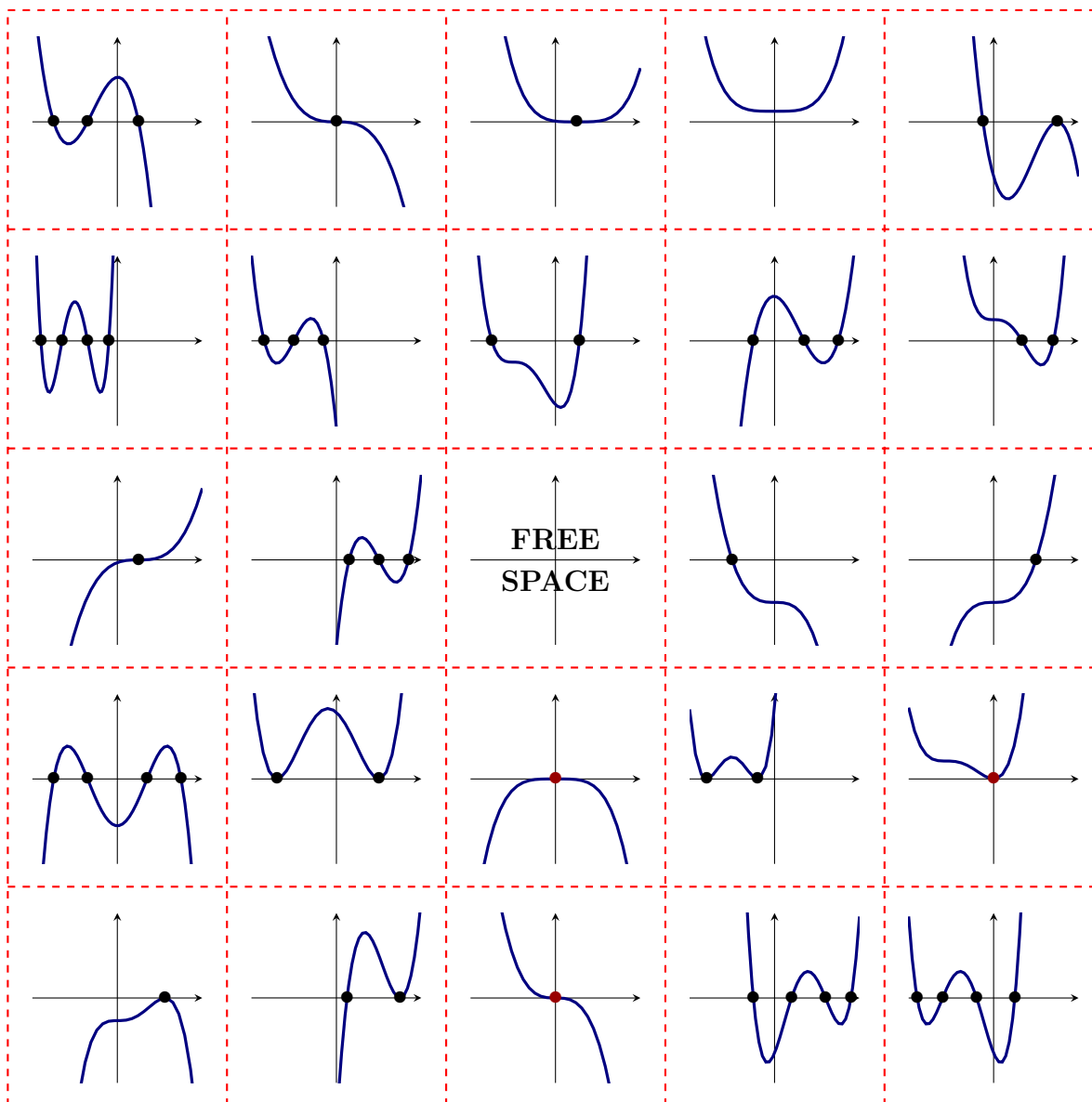
# Zero Bingo Card 19



Each polynomial on this card has degree three or four. All real zeros are shown.

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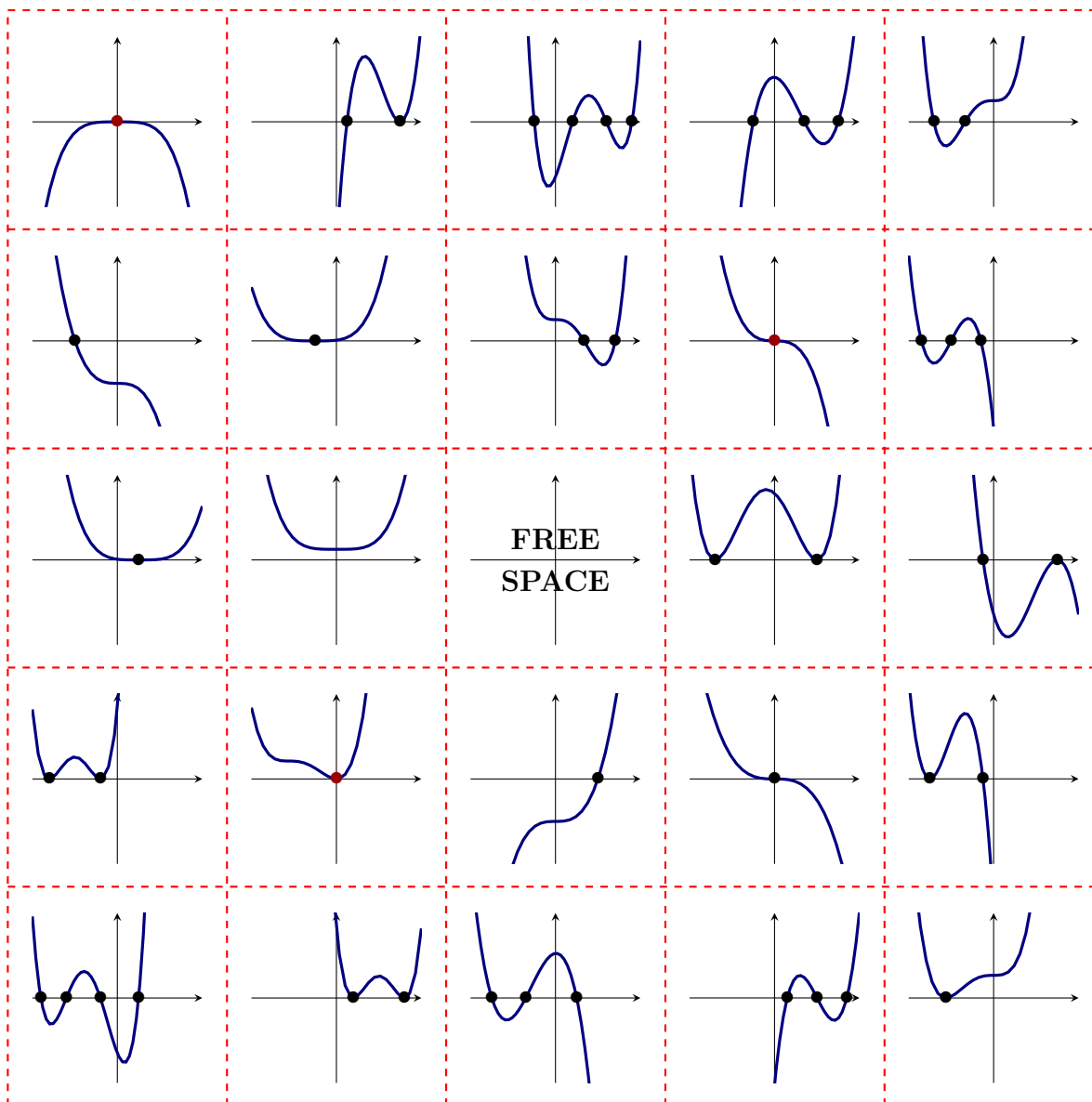
# Zero Bingo Card 20



Each polynomial on this card has degree three or four. All real zeros are shown.

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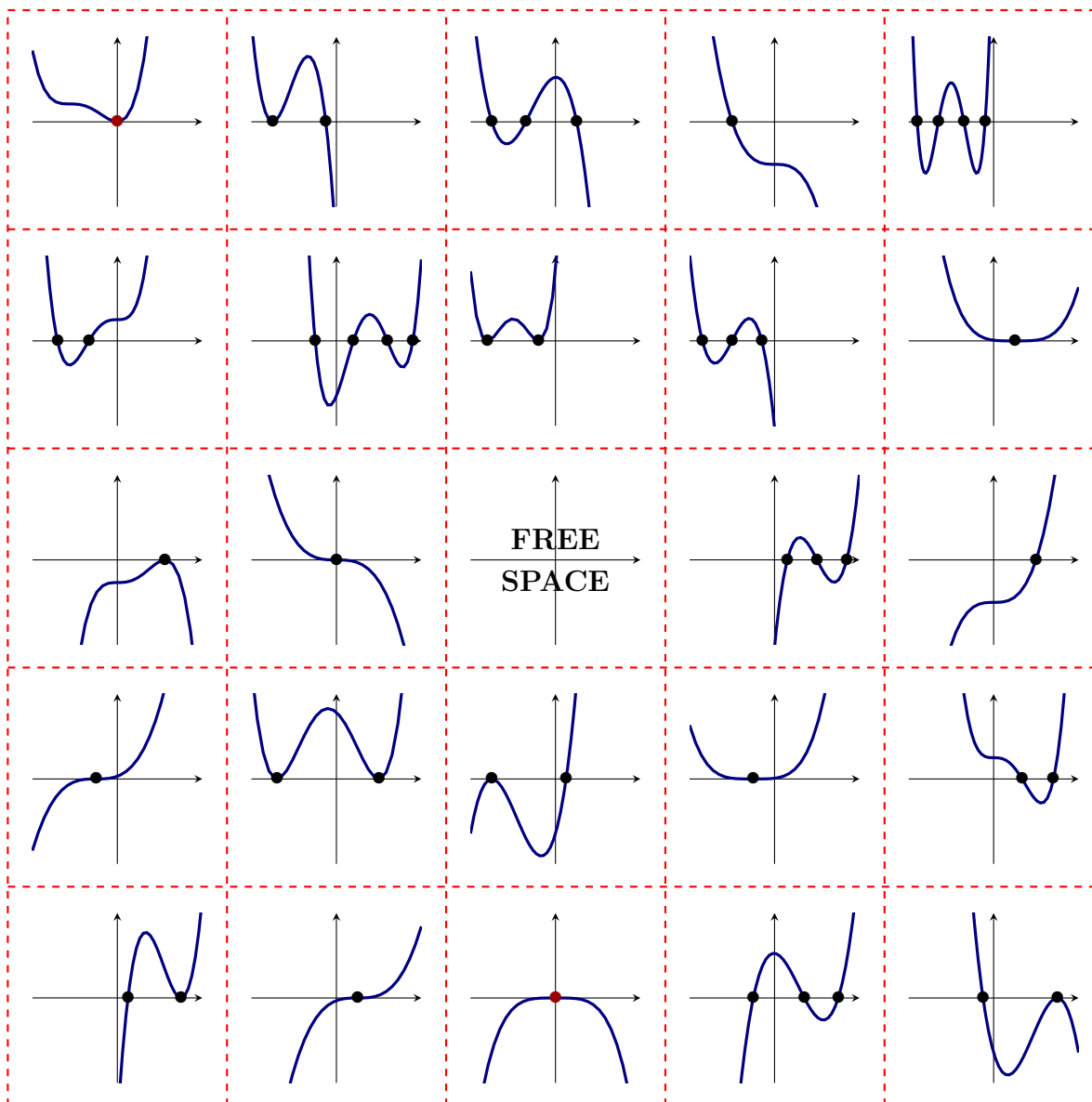
# Zero Bingo Card 21



Each polynomial on this card has degree three or four. All real zeros are shown.

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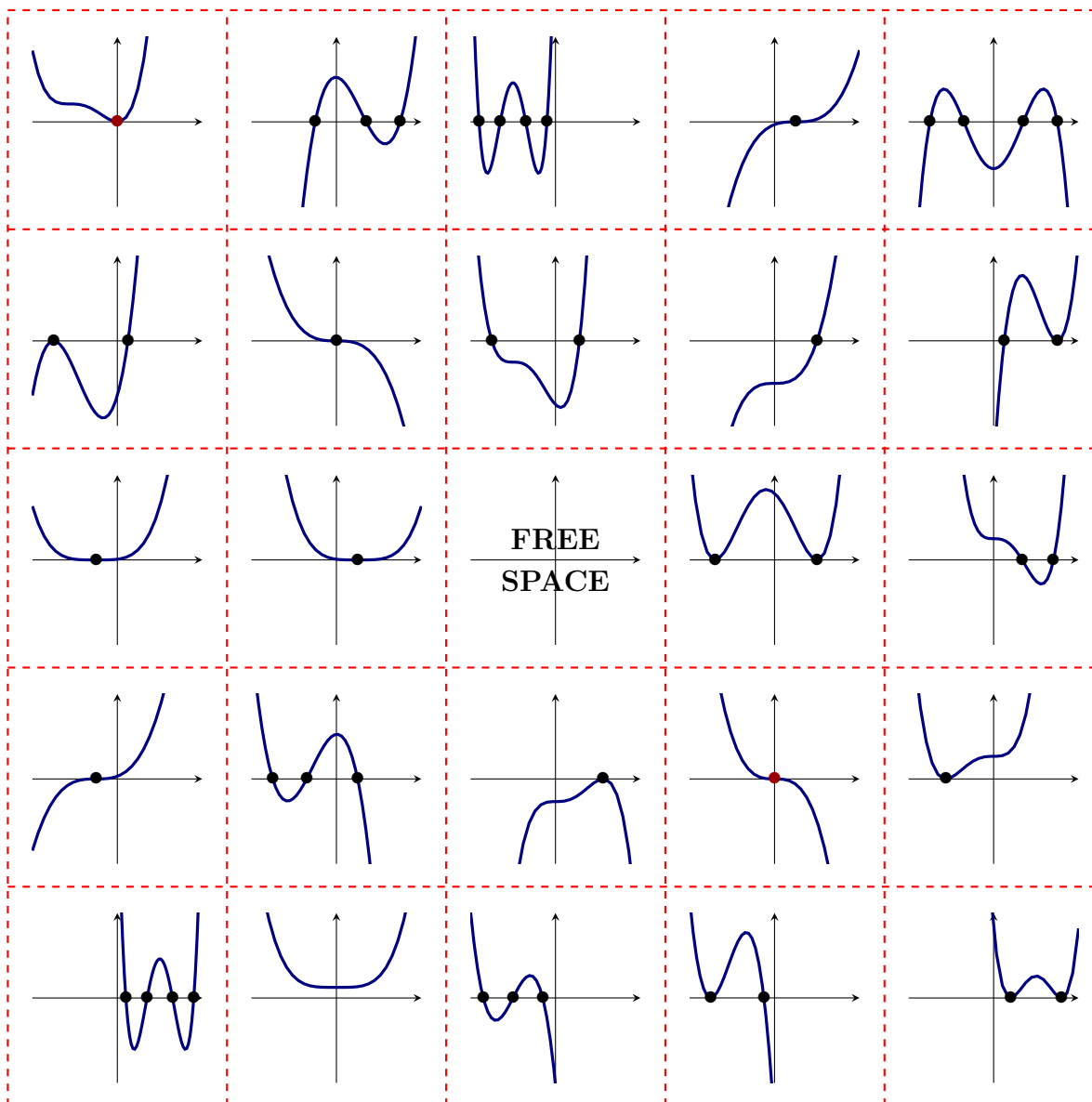
# Zero Bingo Card 22



Each polynomial on this card has degree three or four. All real zeros are shown.

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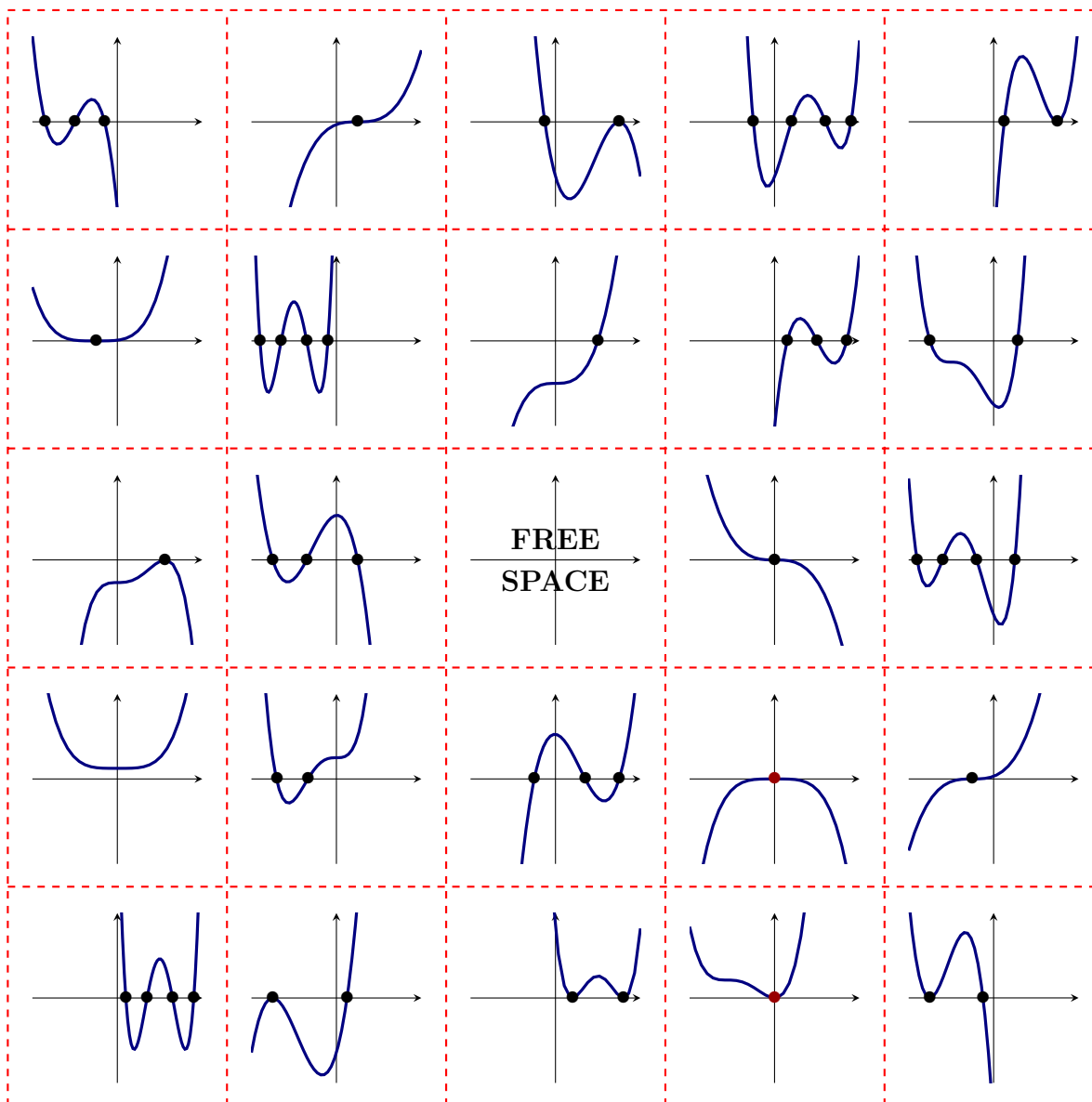
# Zero Bingo Card 23



Each polynomial on this card has degree three or four. All real zeros are shown.

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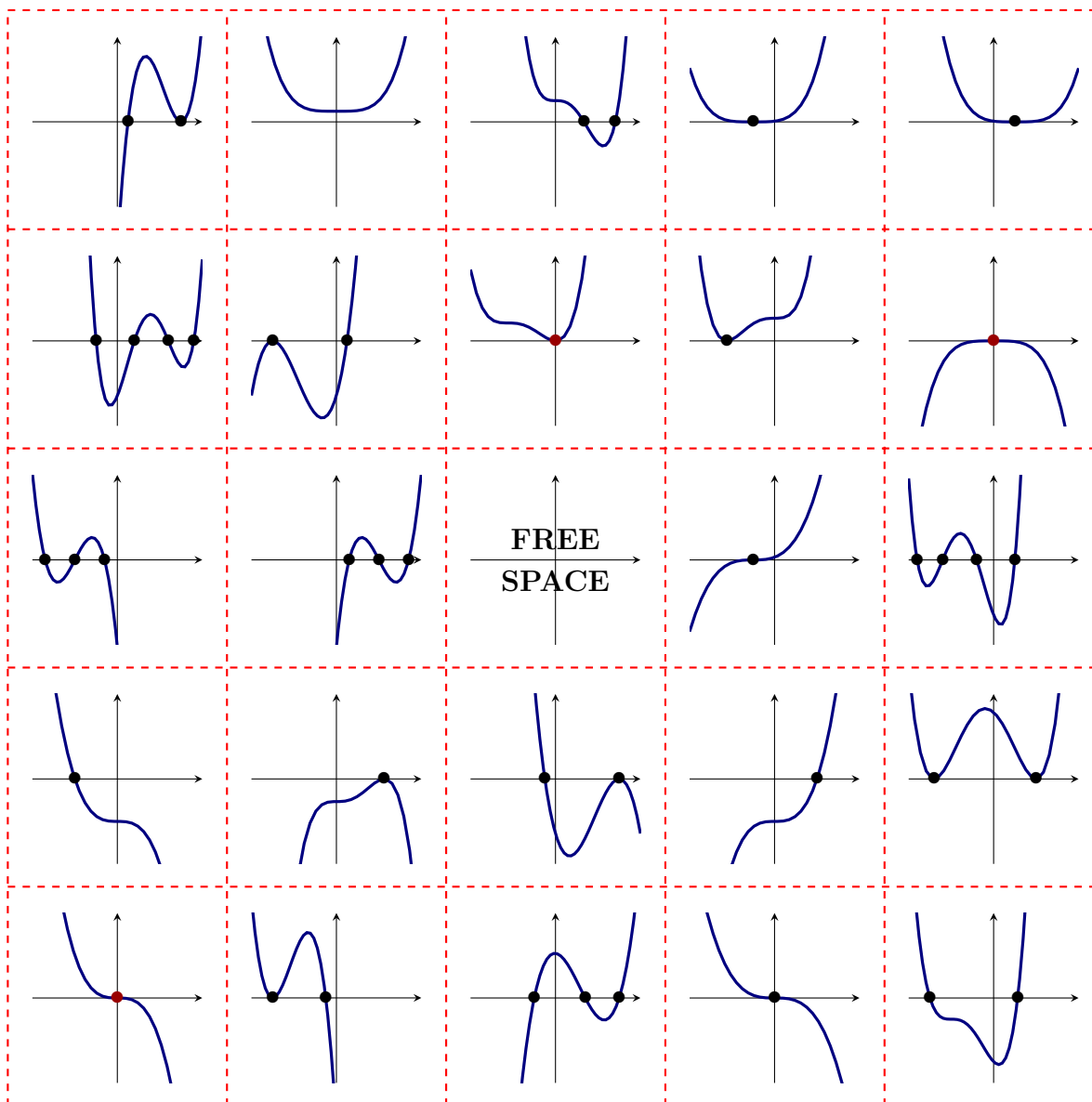
# Zero Bingo Card 24



Each polynomial on this card has degree three or four. All real zeros are shown.

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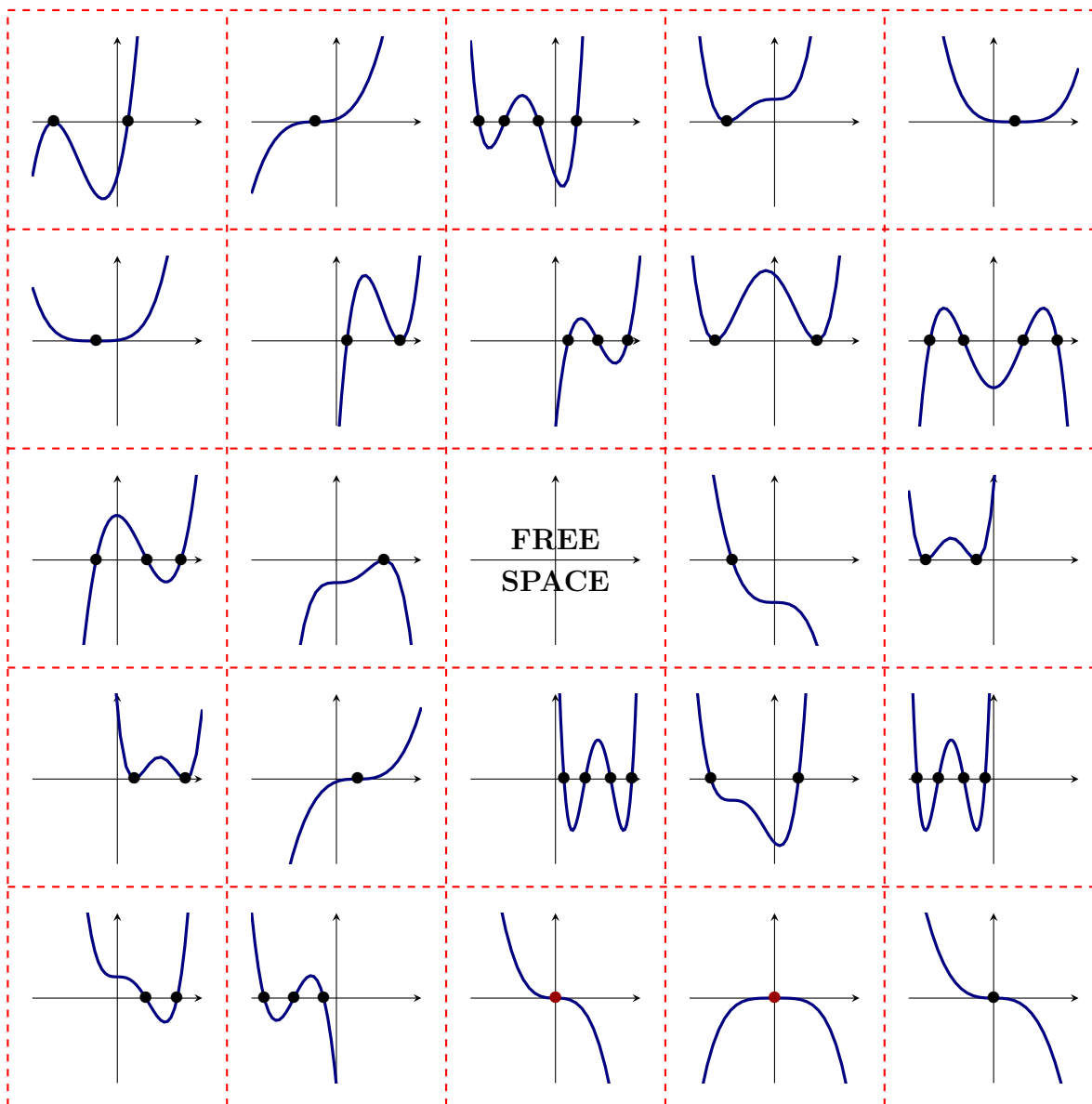
# Zero Bingo Card 25



Each polynomial on this card has degree three or four. All real zeros are shown.

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# Zero Bingo Card 26

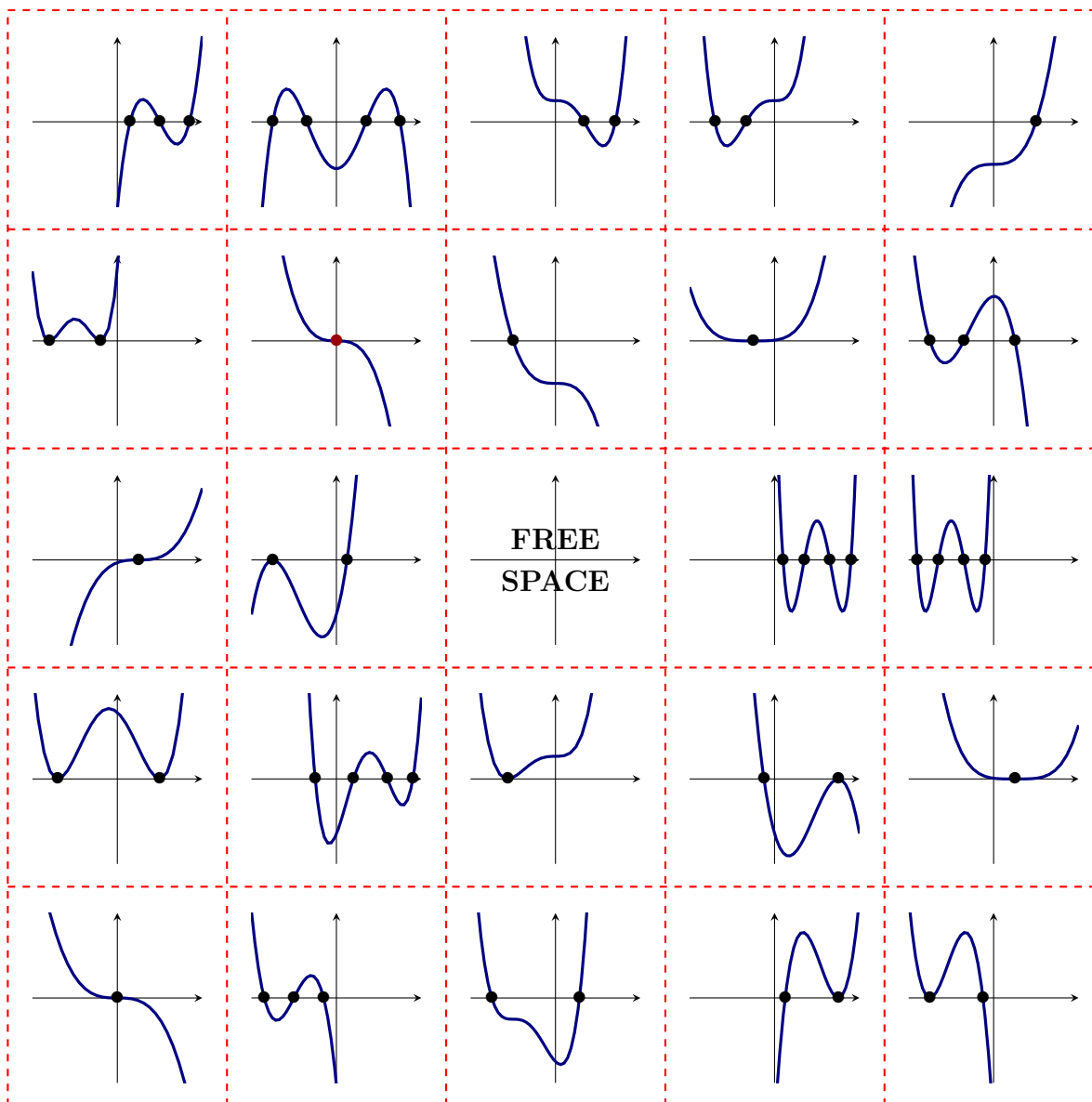


Each polynomial on this card has degree three or four. All real zeros are shown.

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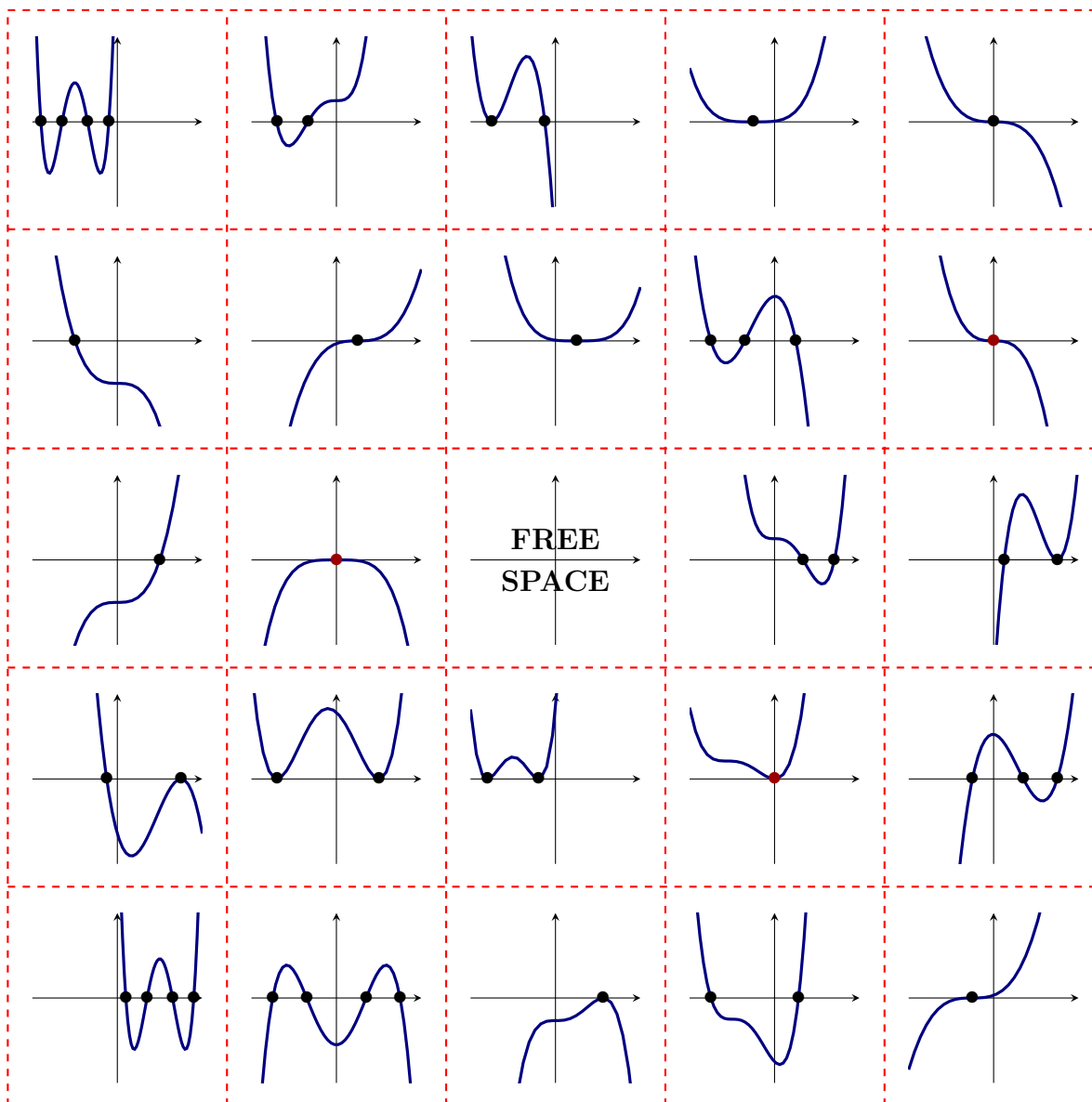
# Zero Bingo Card 27



Each polynomial on this card has degree three or four. All real zeros are shown.

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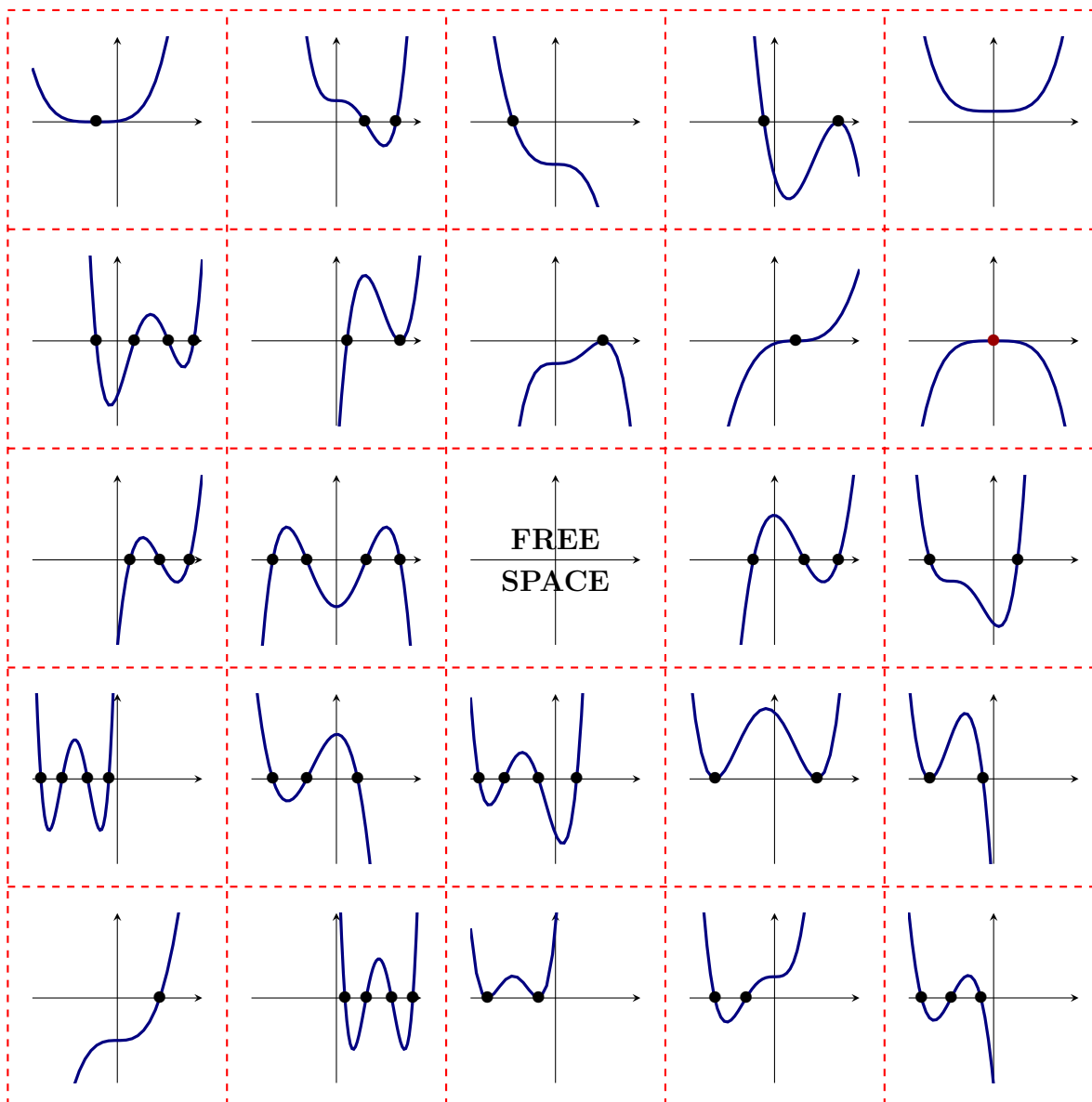
# Zero Bingo Card 28



Each polynomial on this card has degree three or four. All real zeros are shown.

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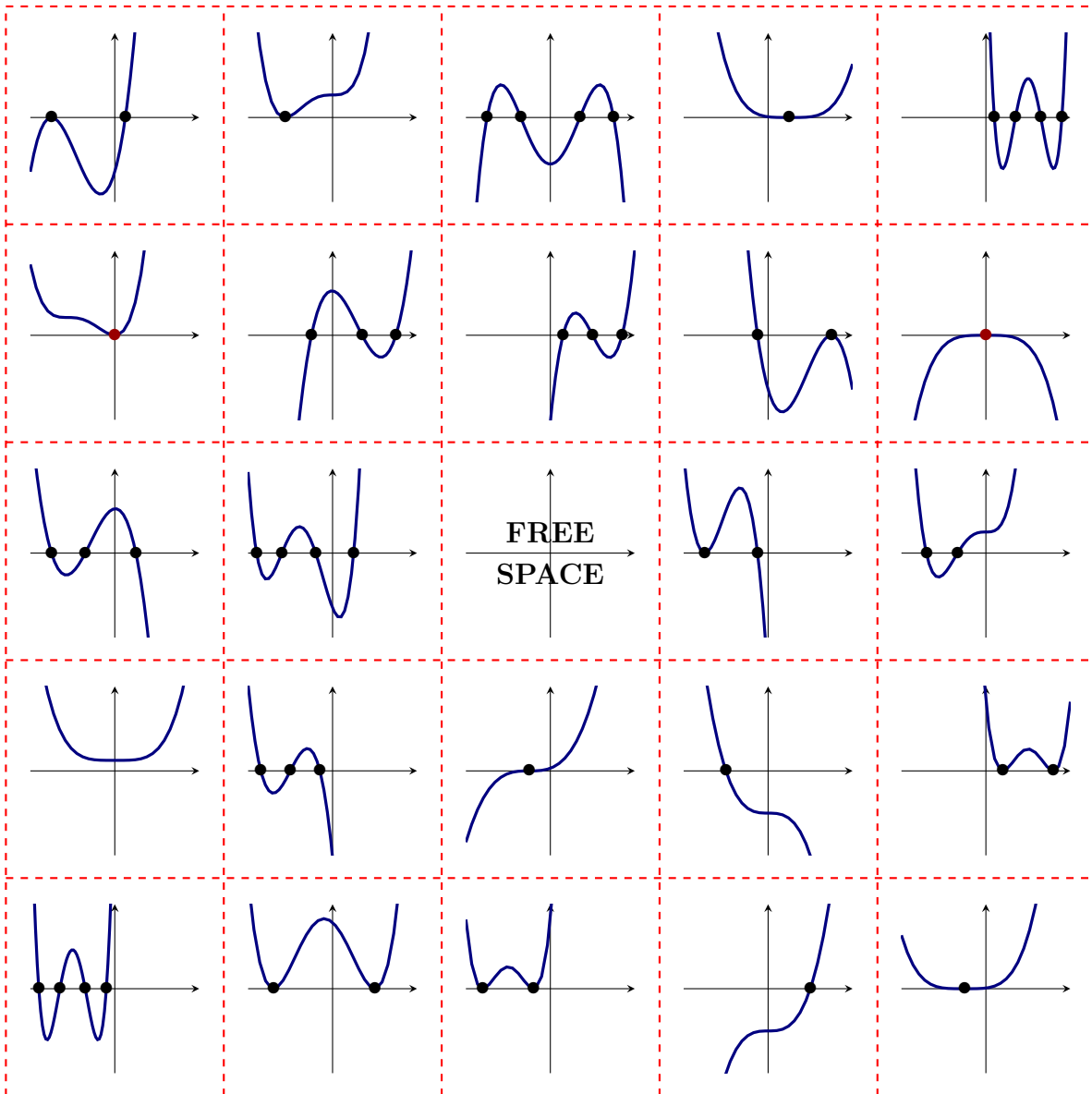
# Zero Bingo Card 29



Each polynomial on this card has degree three or four. All real zeros are shown.

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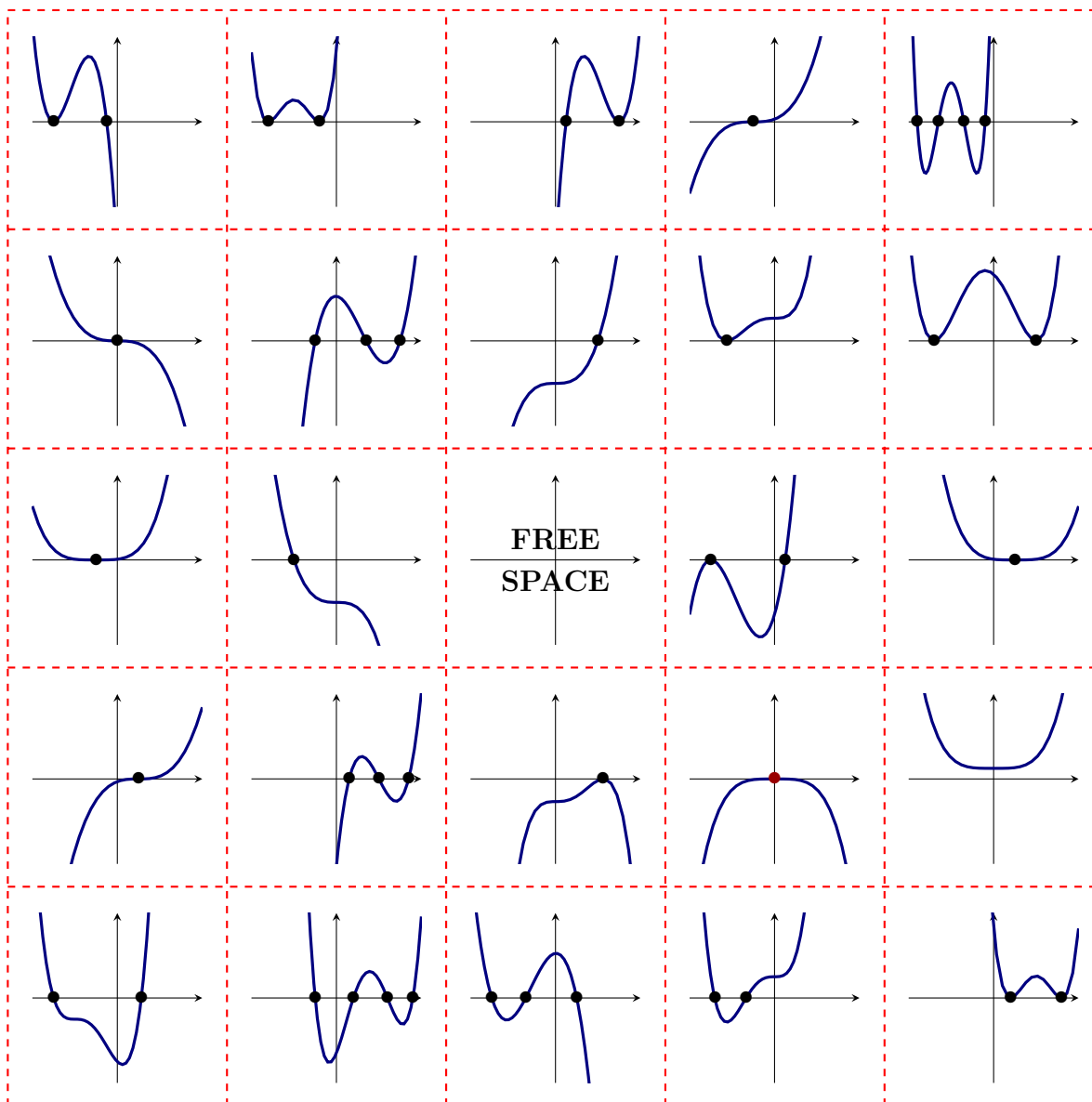
# Zero Bingo Card 30



Each polynomial on this card has degree three or four. All real zeros are shown.

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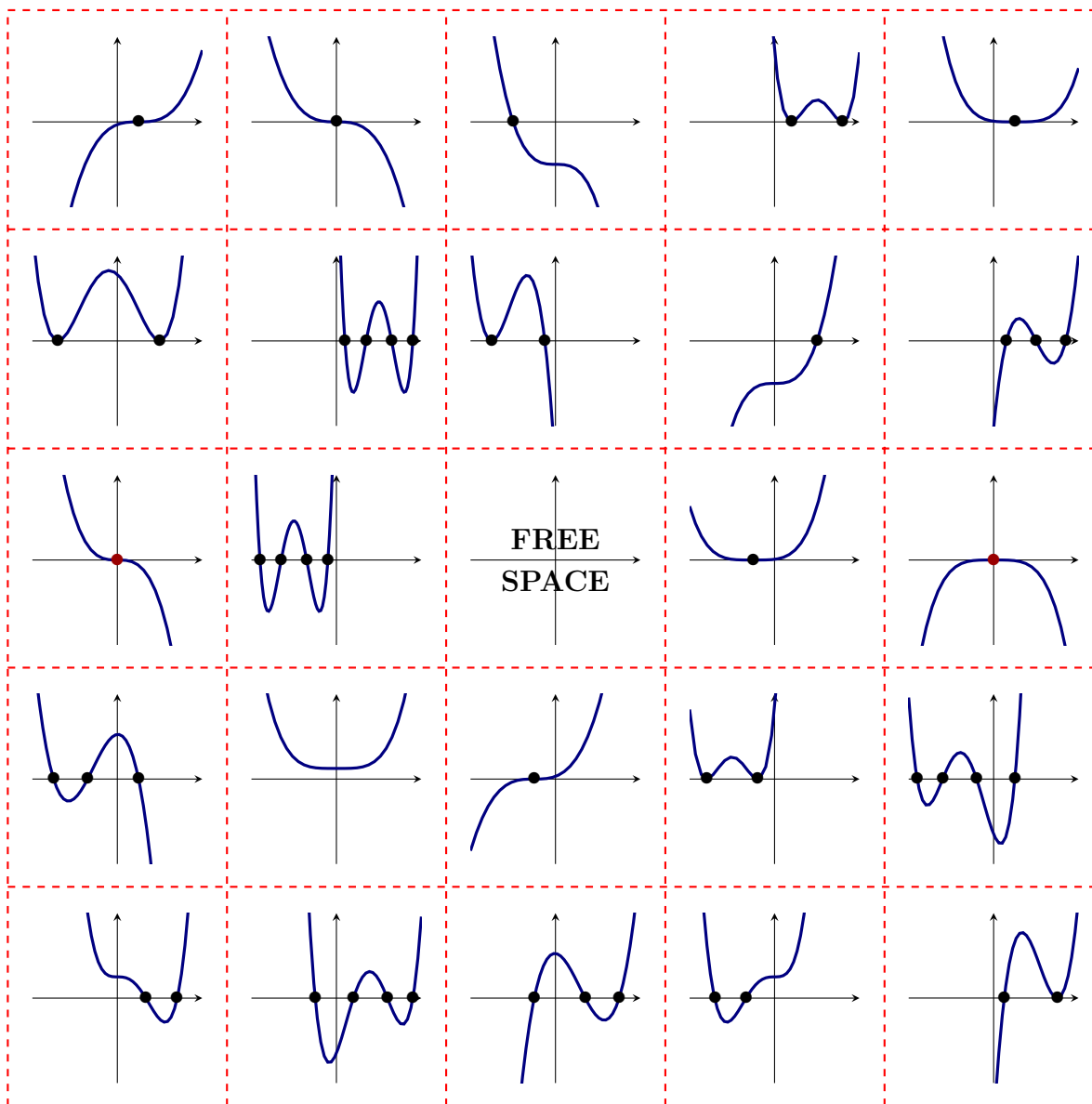
# Zero Bingo Card 31



Each polynomial on this card has degree three or four. All real zeros are shown.

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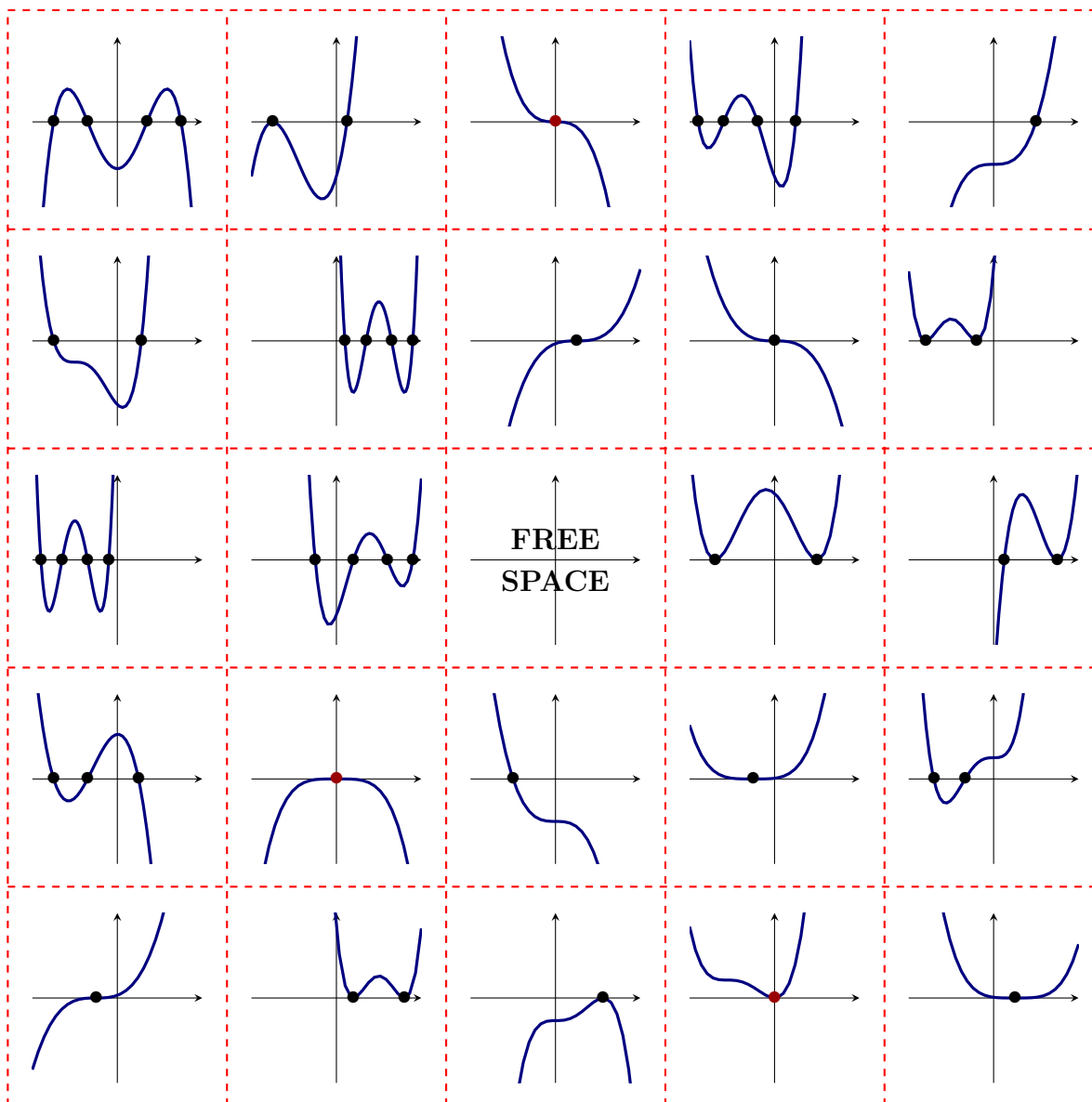
# Zero Bingo Card 32



Each polynomial on this card has degree three or four. All real zeros are shown.

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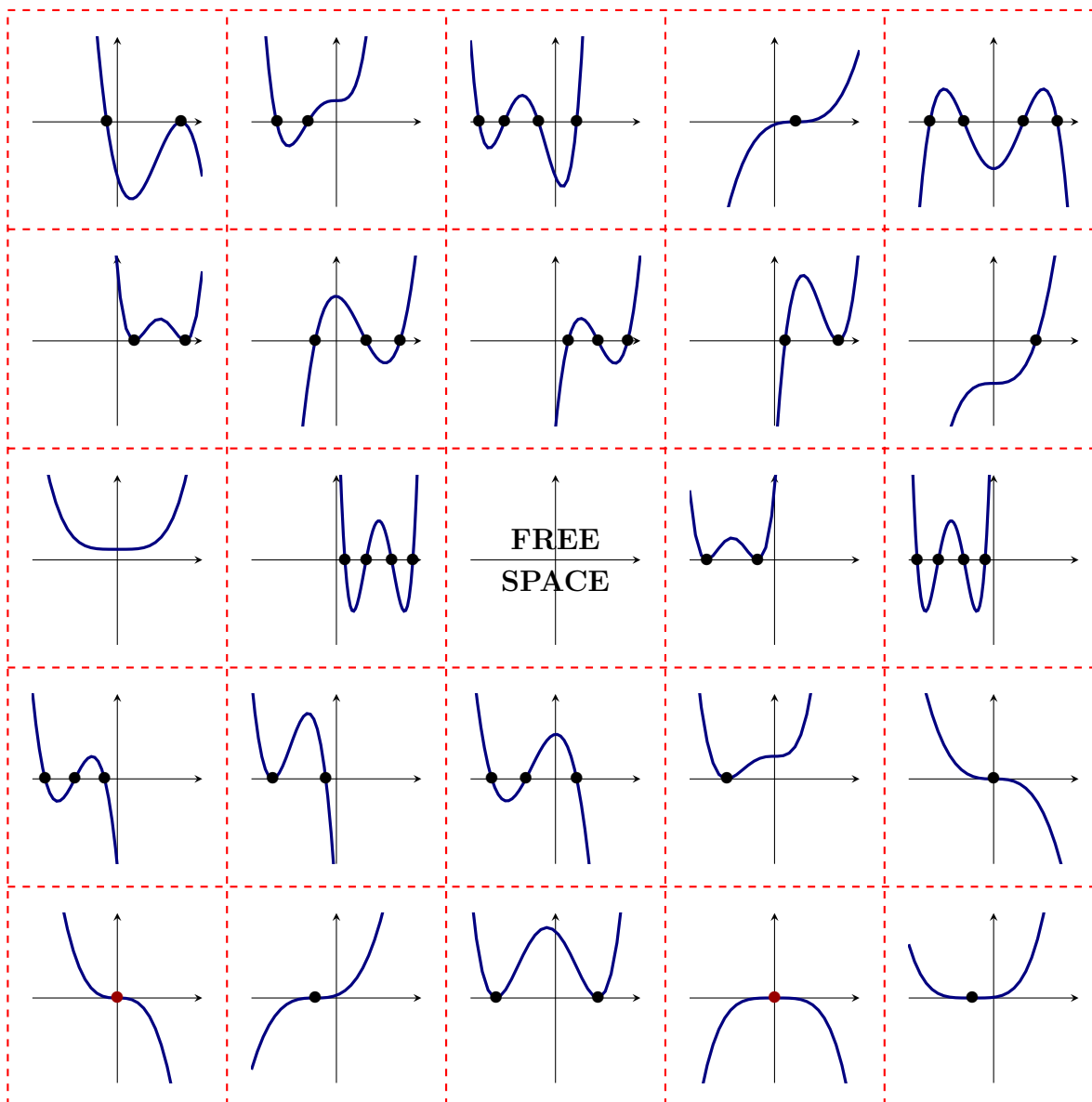
# Zero Bingo Card 33



Each polynomial on this card has degree three or four. All real zeros are shown.

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# Zero Bingo Card 34

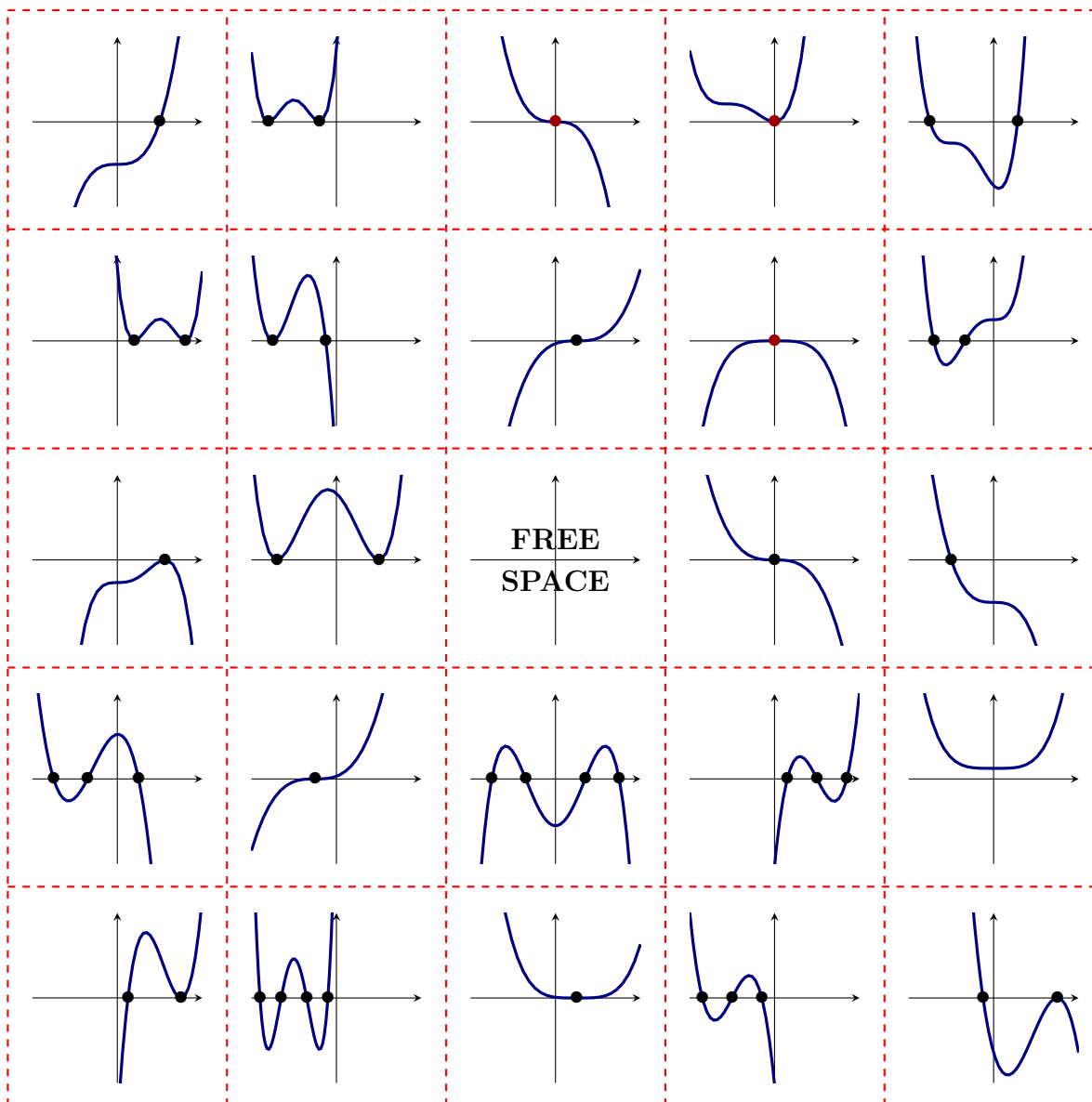


Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016



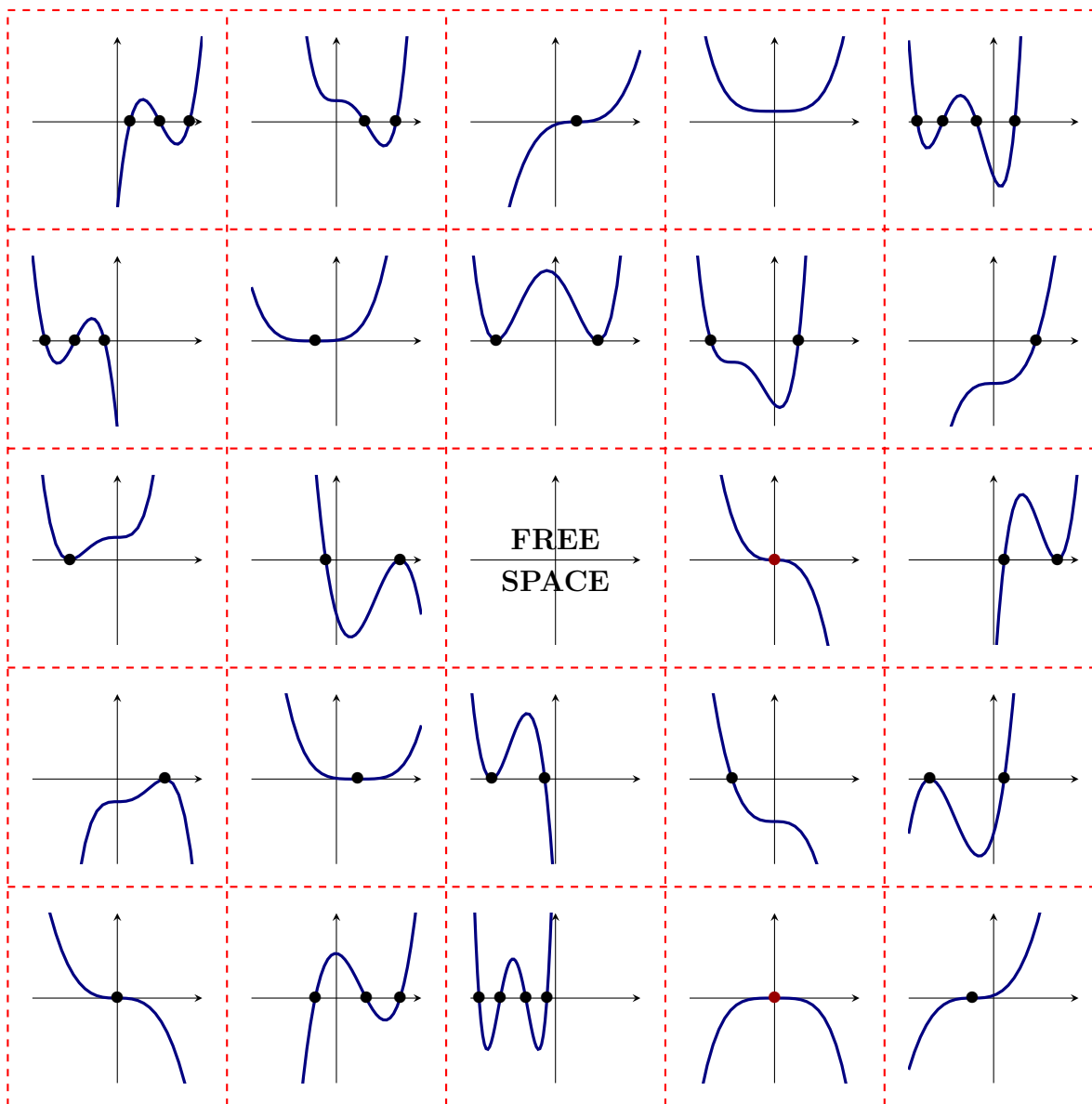
# Zero Bingo Card 35



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

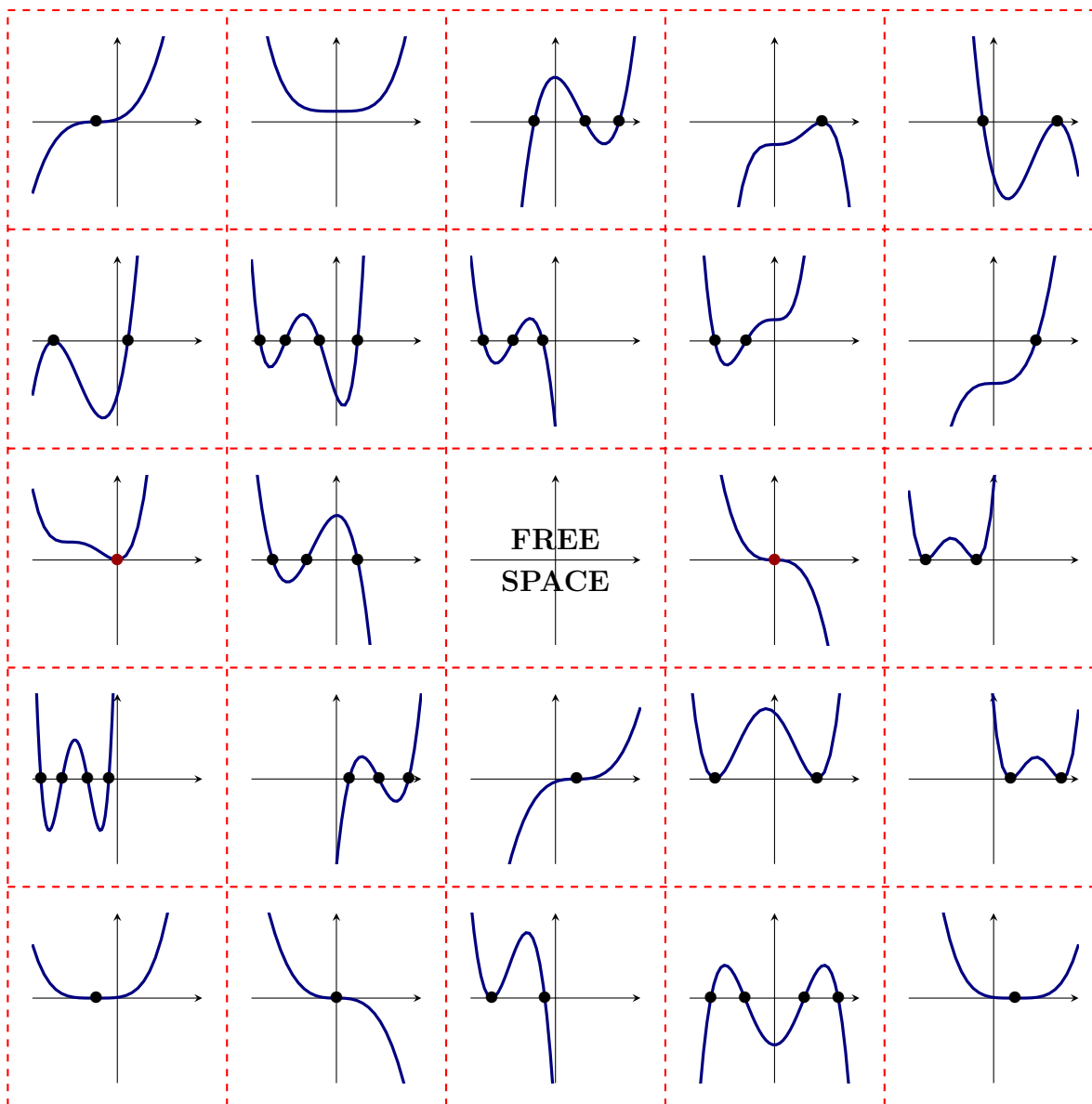
# Zero Bingo Card 36



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

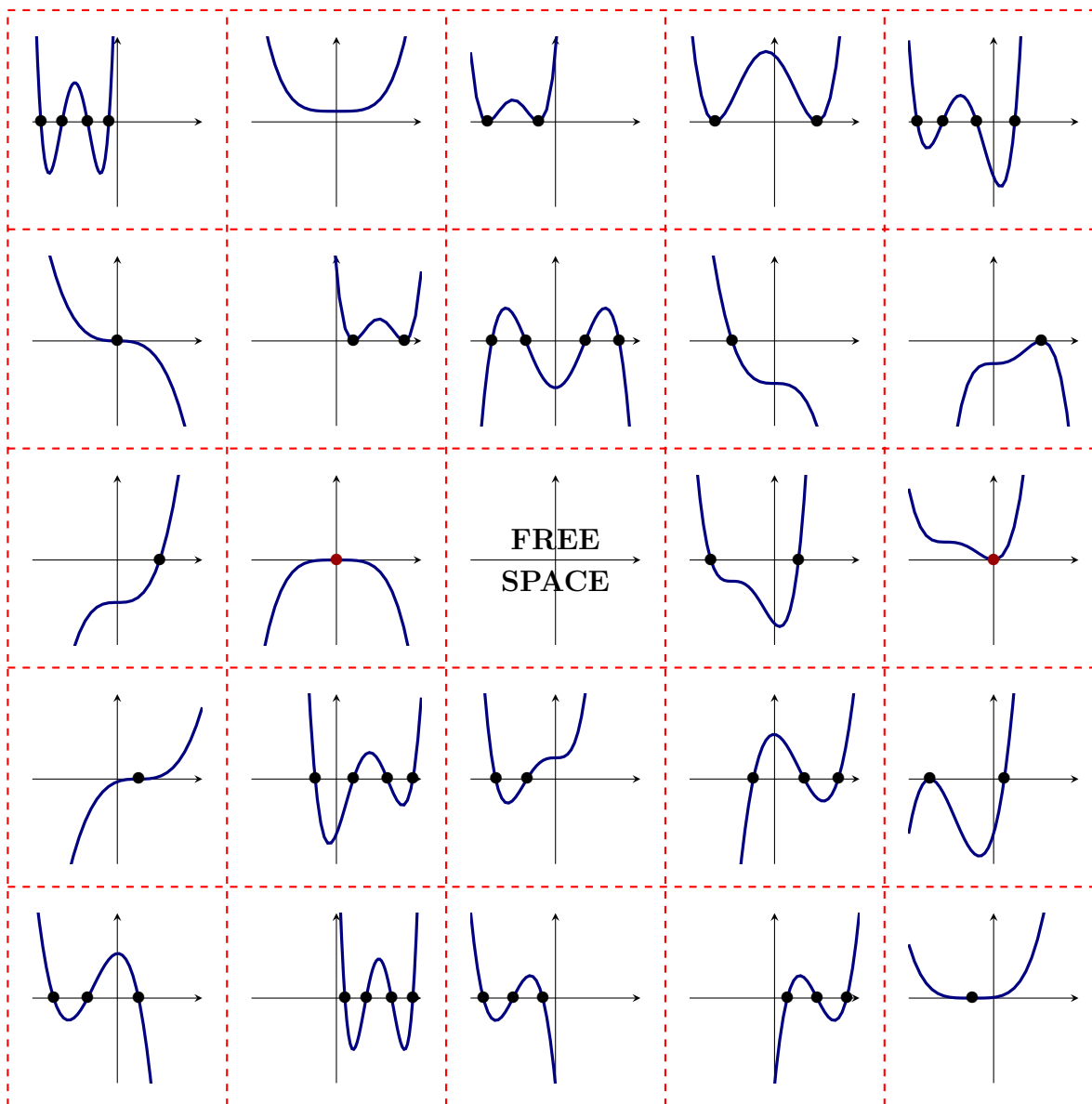
# Zero Bingo Card 37



Each polynomial on this card has degree three or four. All real zeros are shown.

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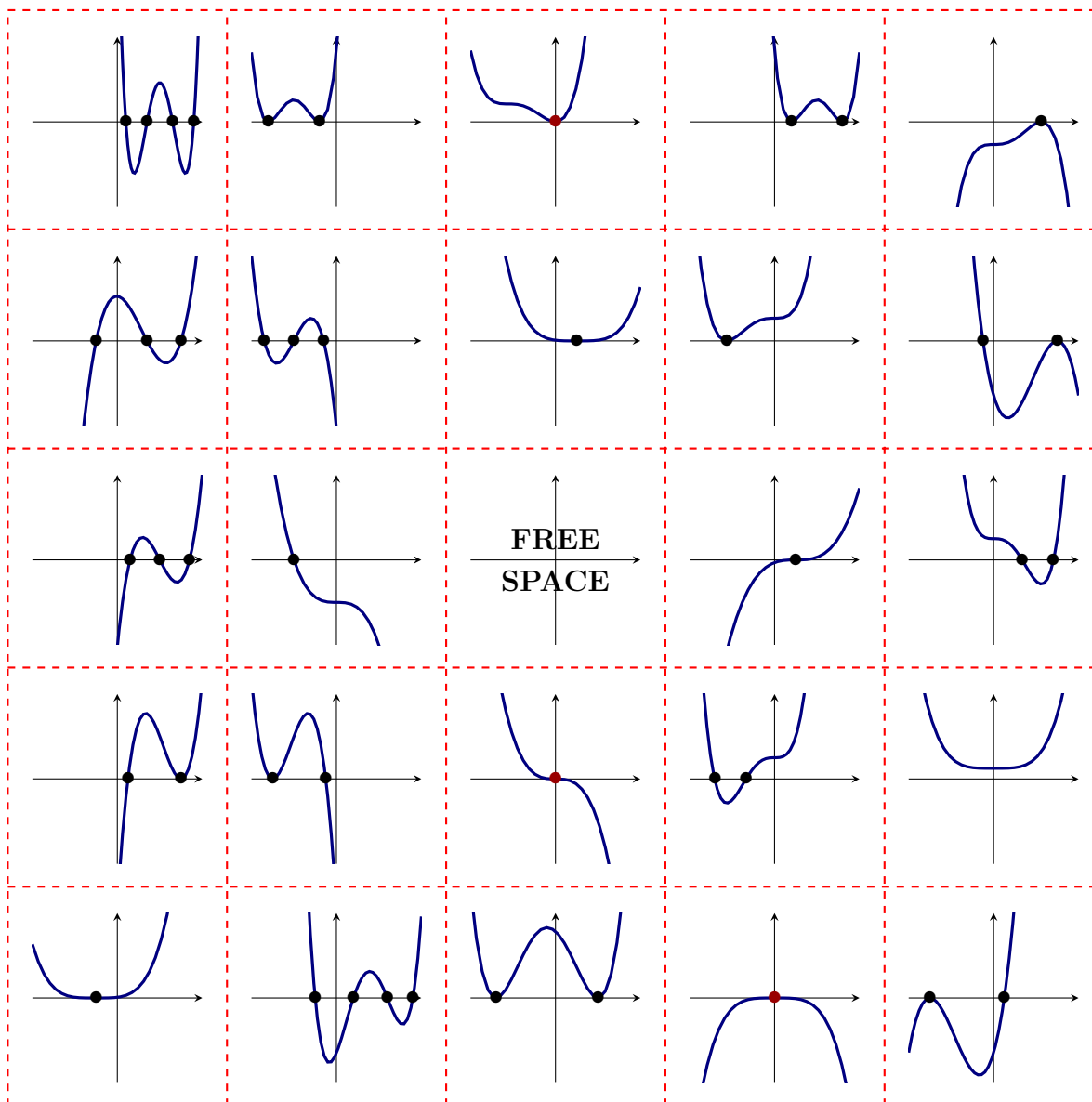
# Zero Bingo Card 38



Each polynomial on this card has degree three or four. All real zeros are shown.

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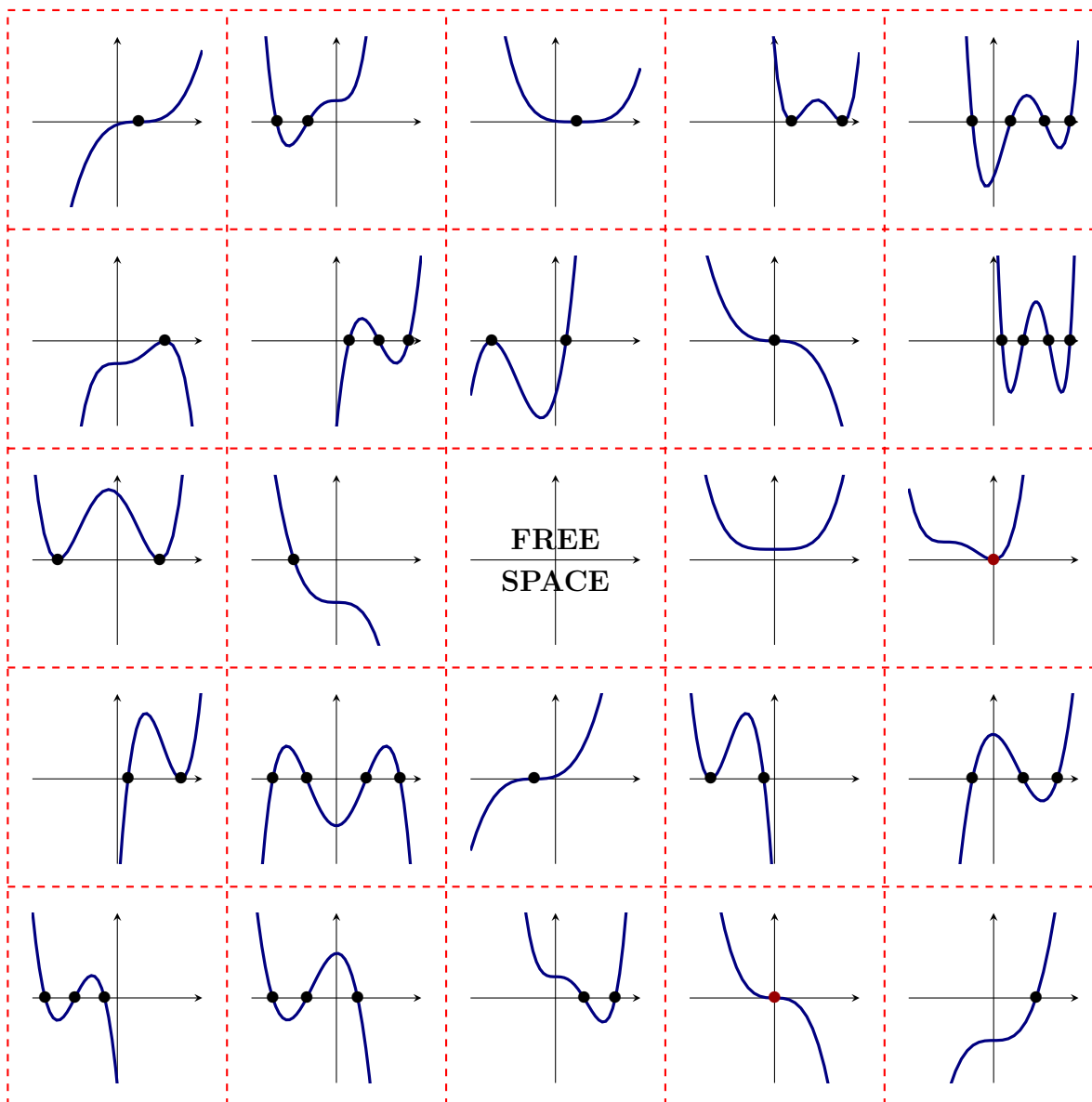
# Zero Bingo Card 39



Each polynomial on this card has degree three or four. All real zeros are shown.

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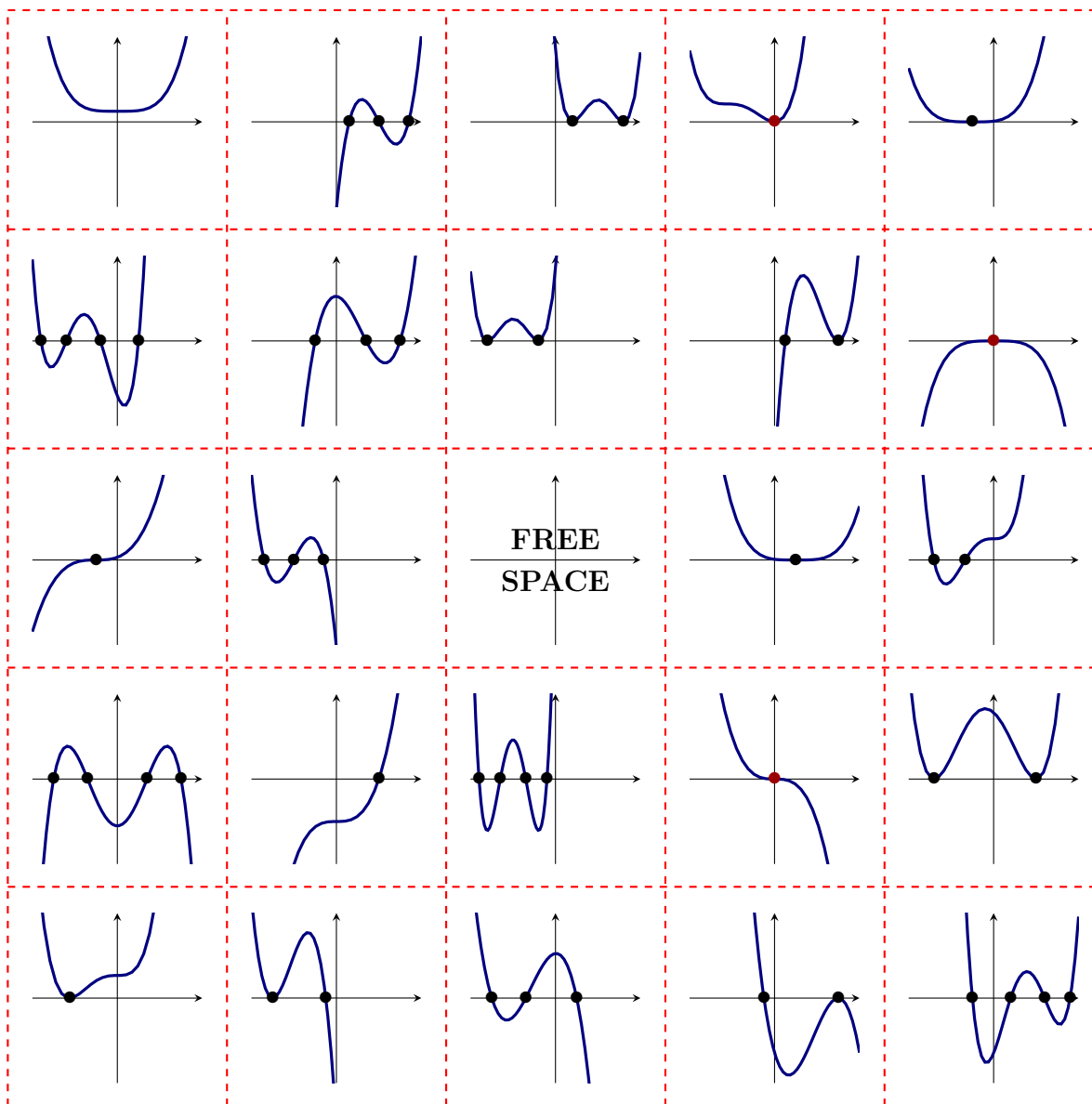
# Zero Bingo Card 40



Each polynomial on this card has degree three or four. All real zeros are shown.

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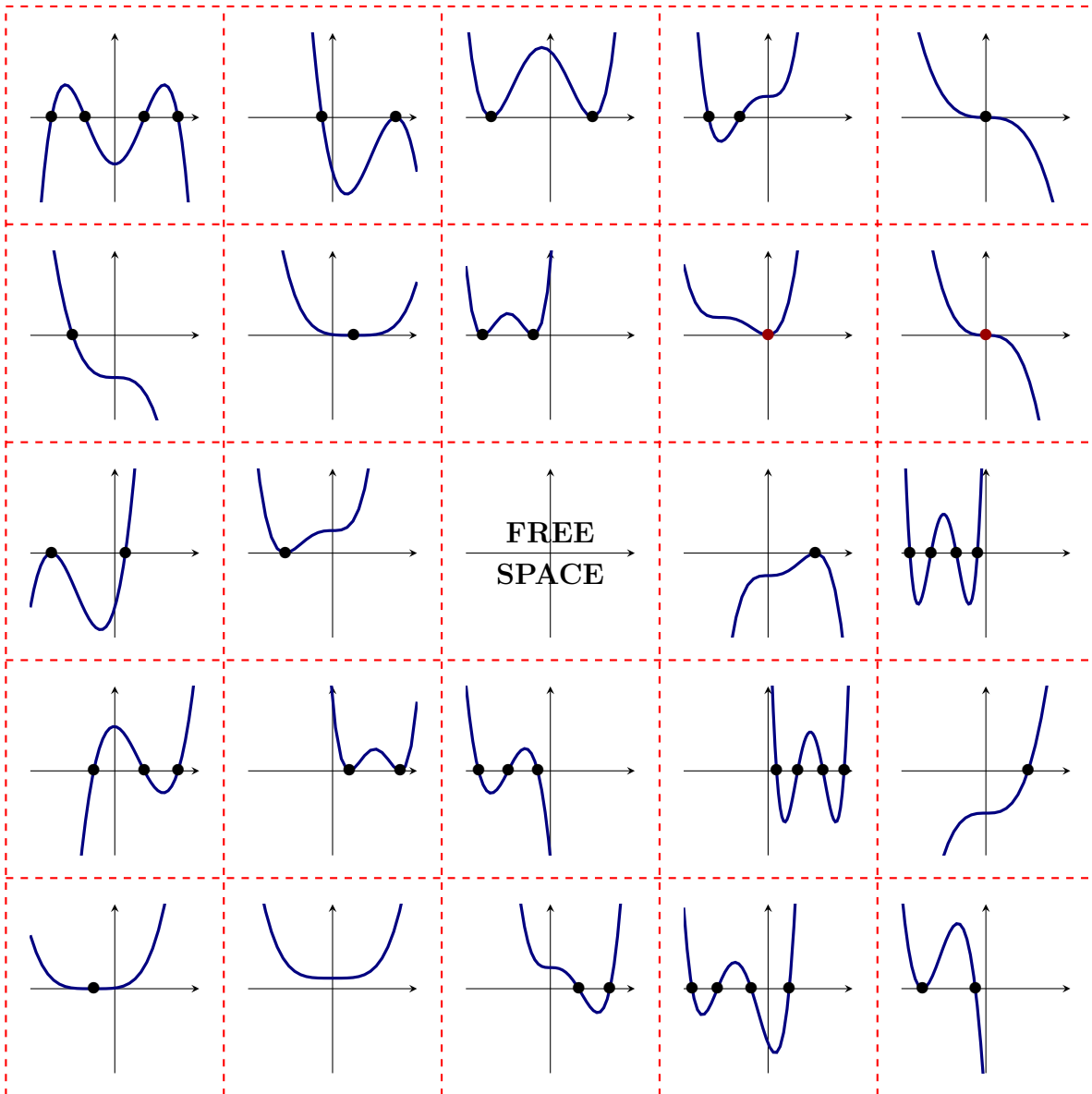
# Zero Bingo Card 41



Each polynomial on this card has degree three or four. All real zeros are shown.

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# Zero Bingo Card 42

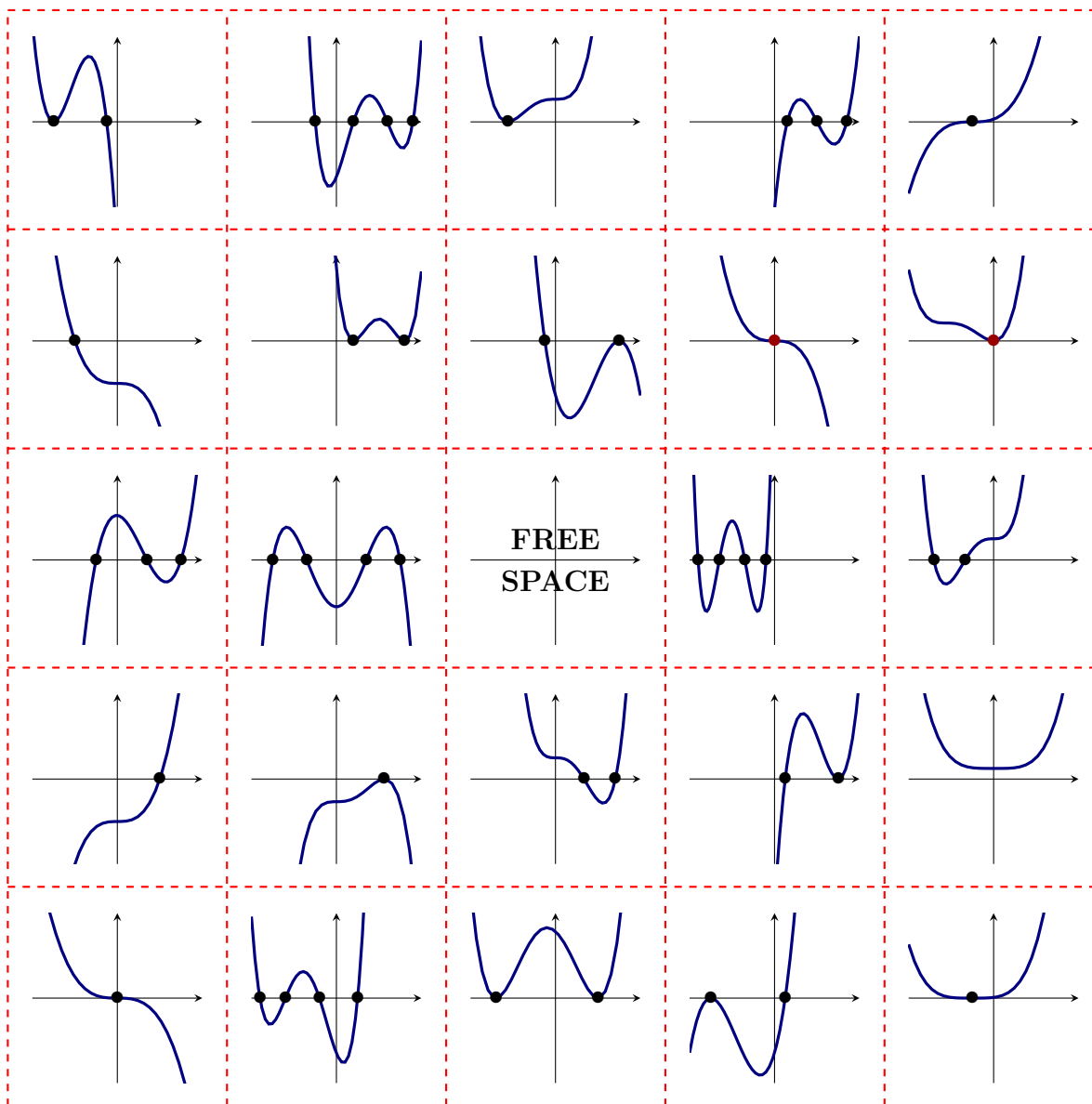


Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016



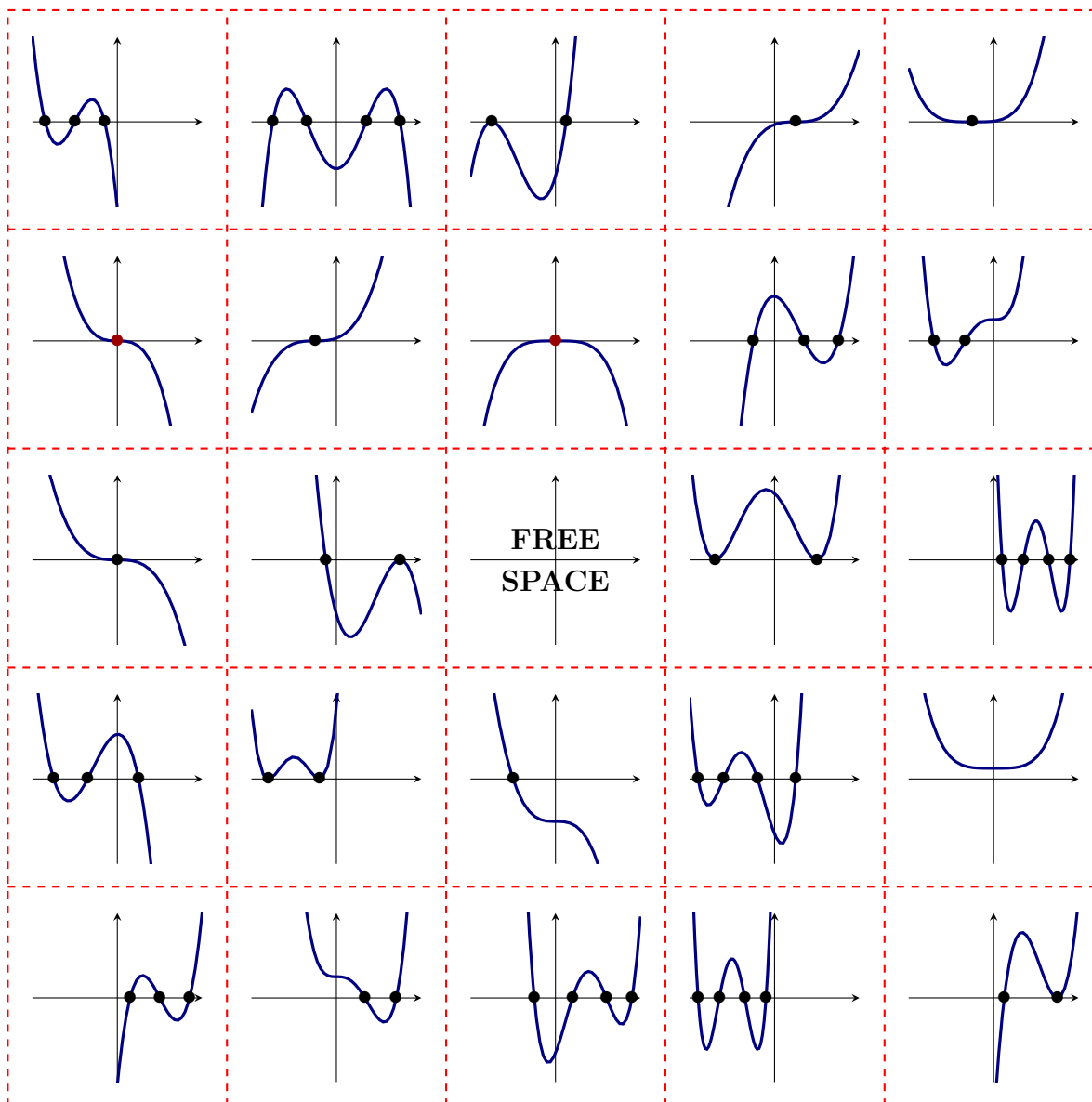
# Zero Bingo Card 43



Each polynomial on this card has degree three or four. All real zeros are shown.

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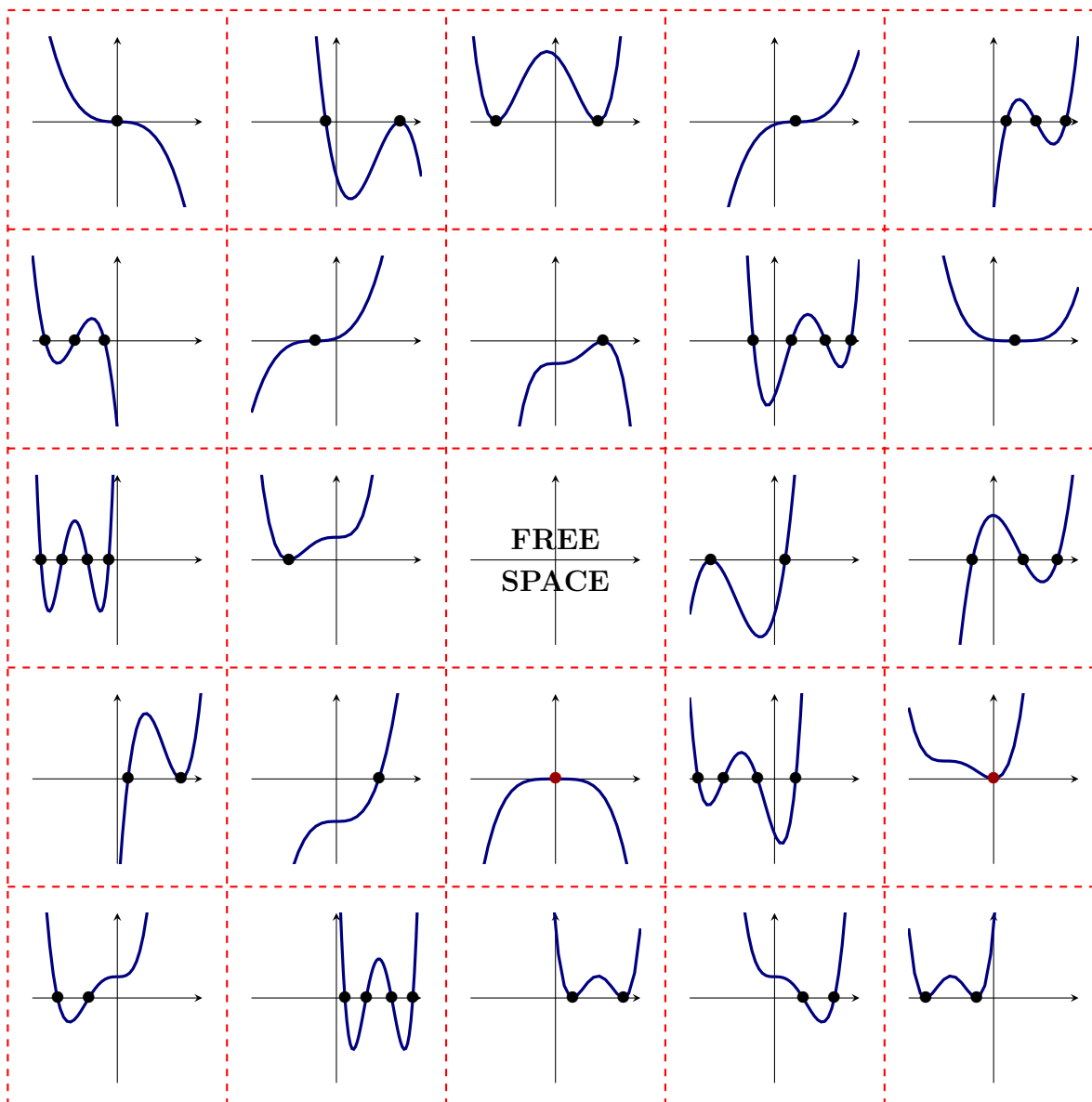
# Zero Bingo Card 44



Each polynomial on this card has degree three or four. All real zeros are shown.

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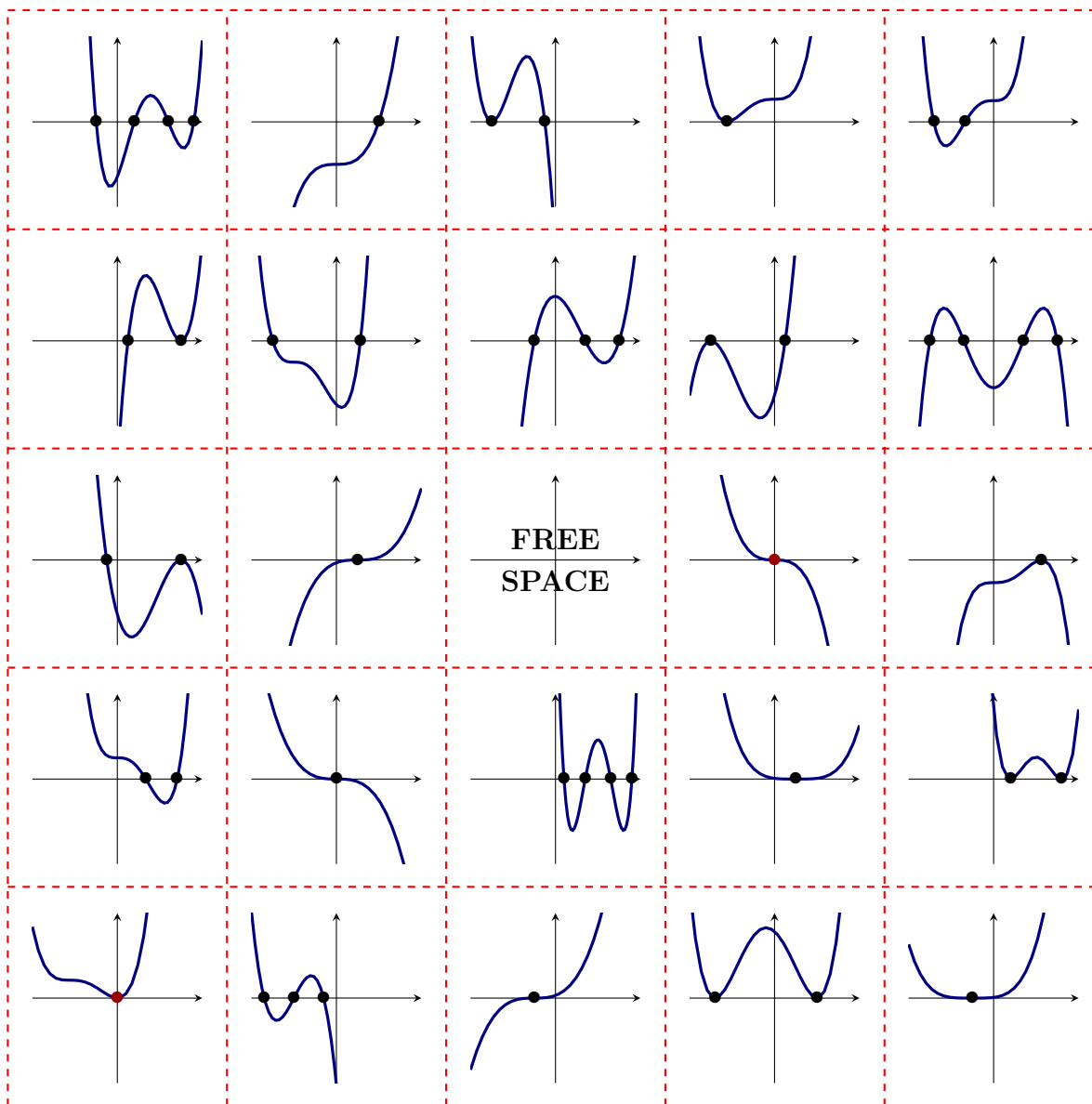
# Zero Bingo Card 45



Each polynomial on this card has degree three or four. All real zeros are shown.

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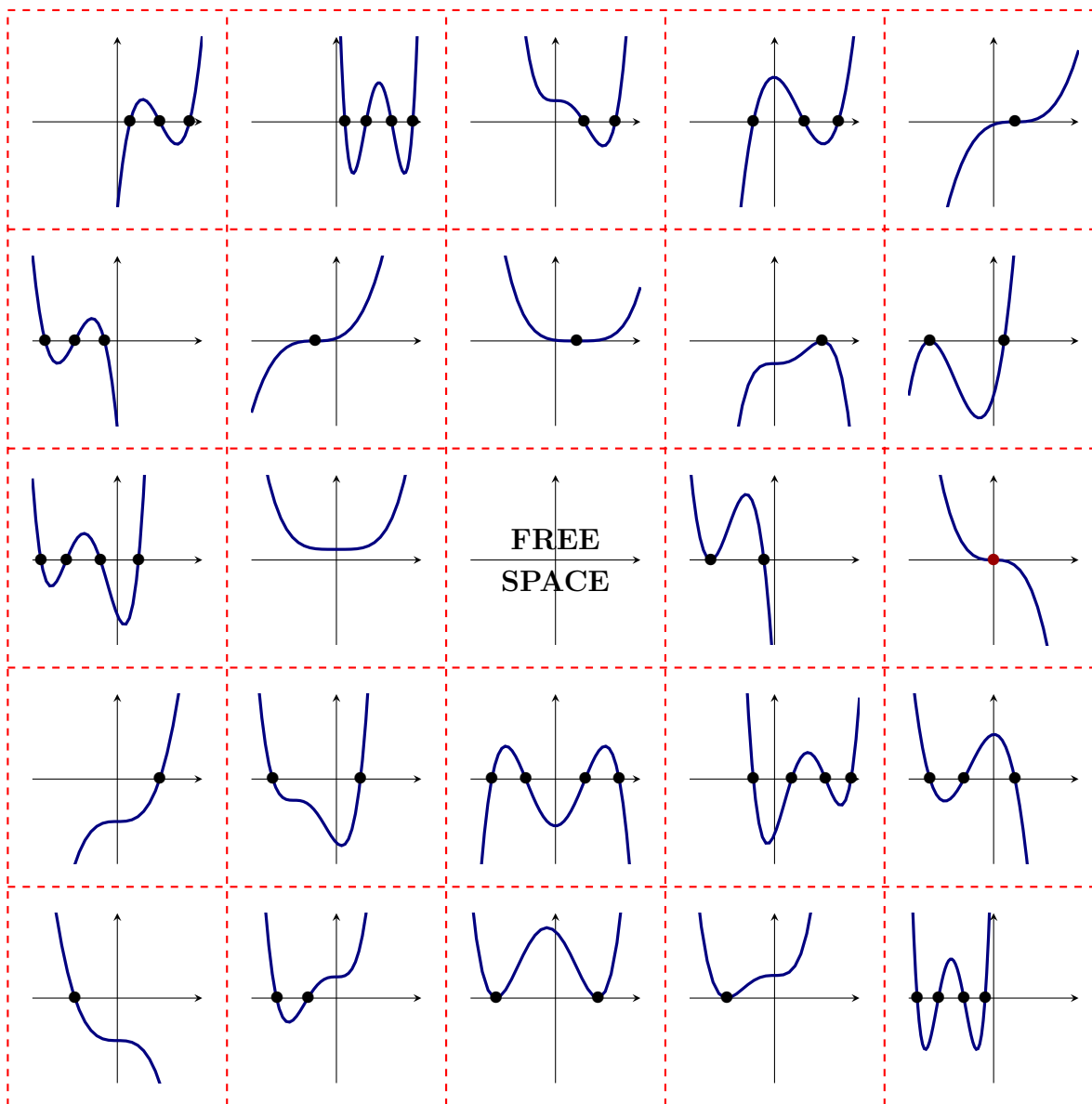
# Zero Bingo Card 46



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

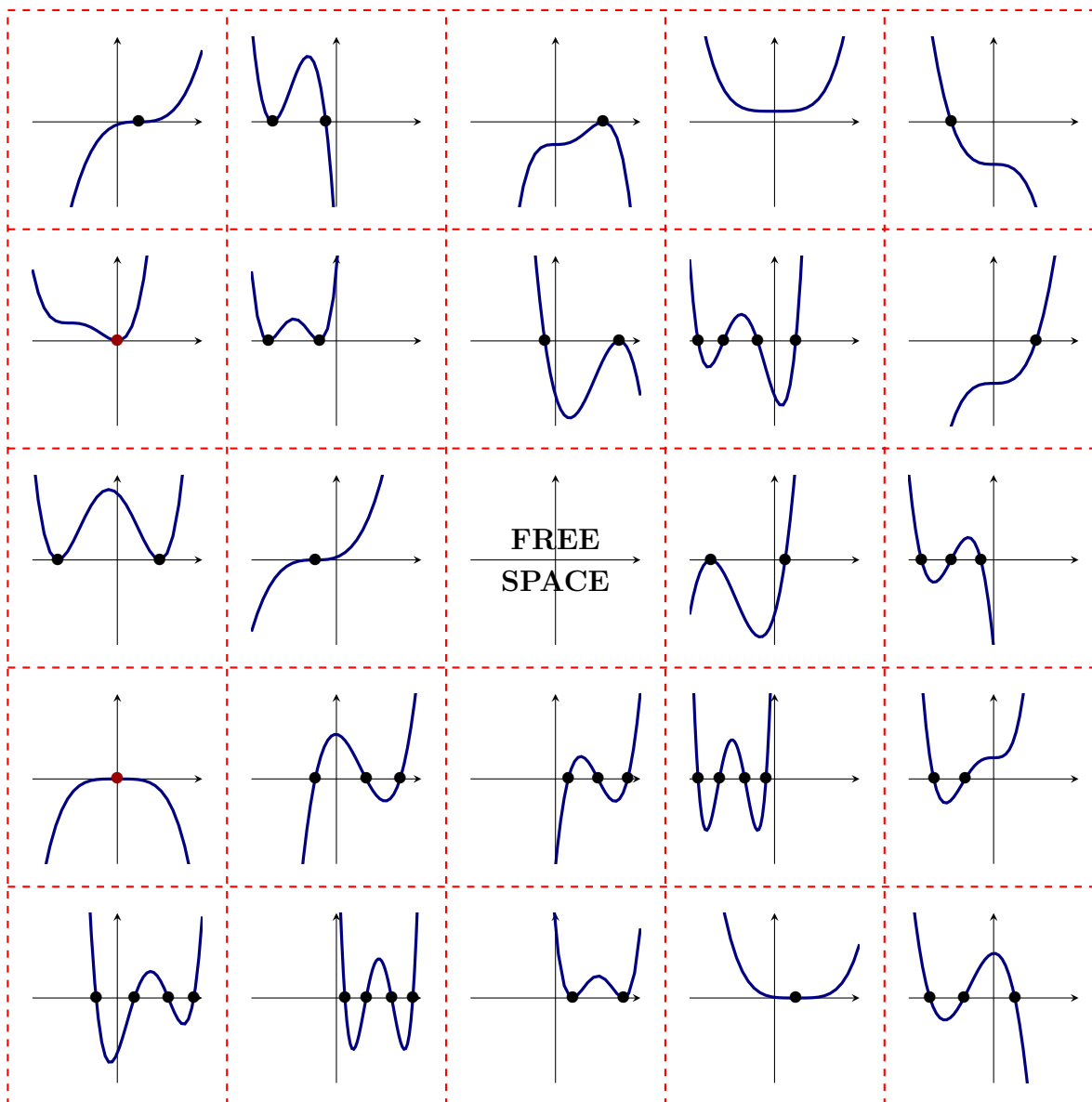
# Zero Bingo Card 47



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

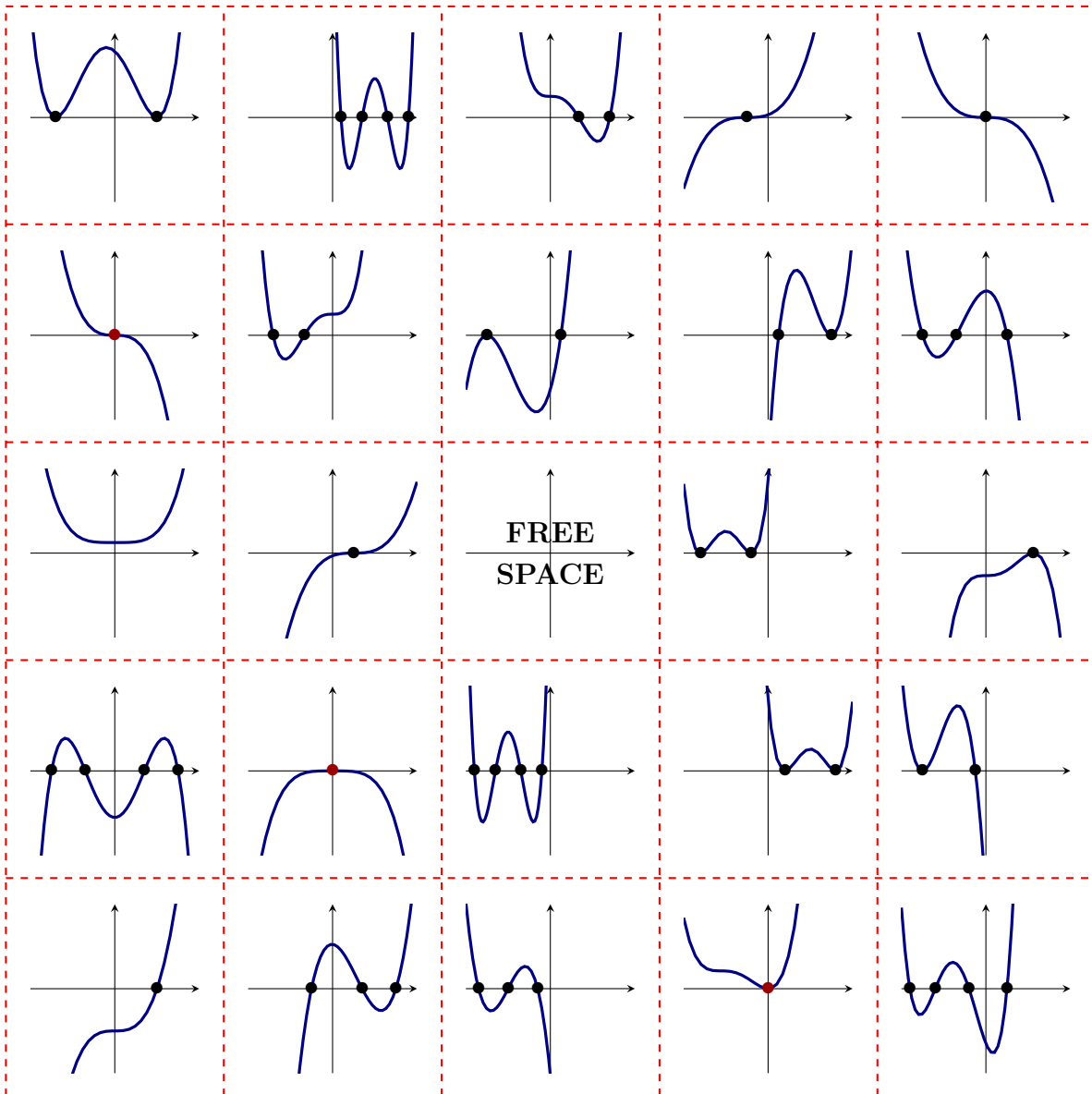
# Zero Bingo Card 48



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

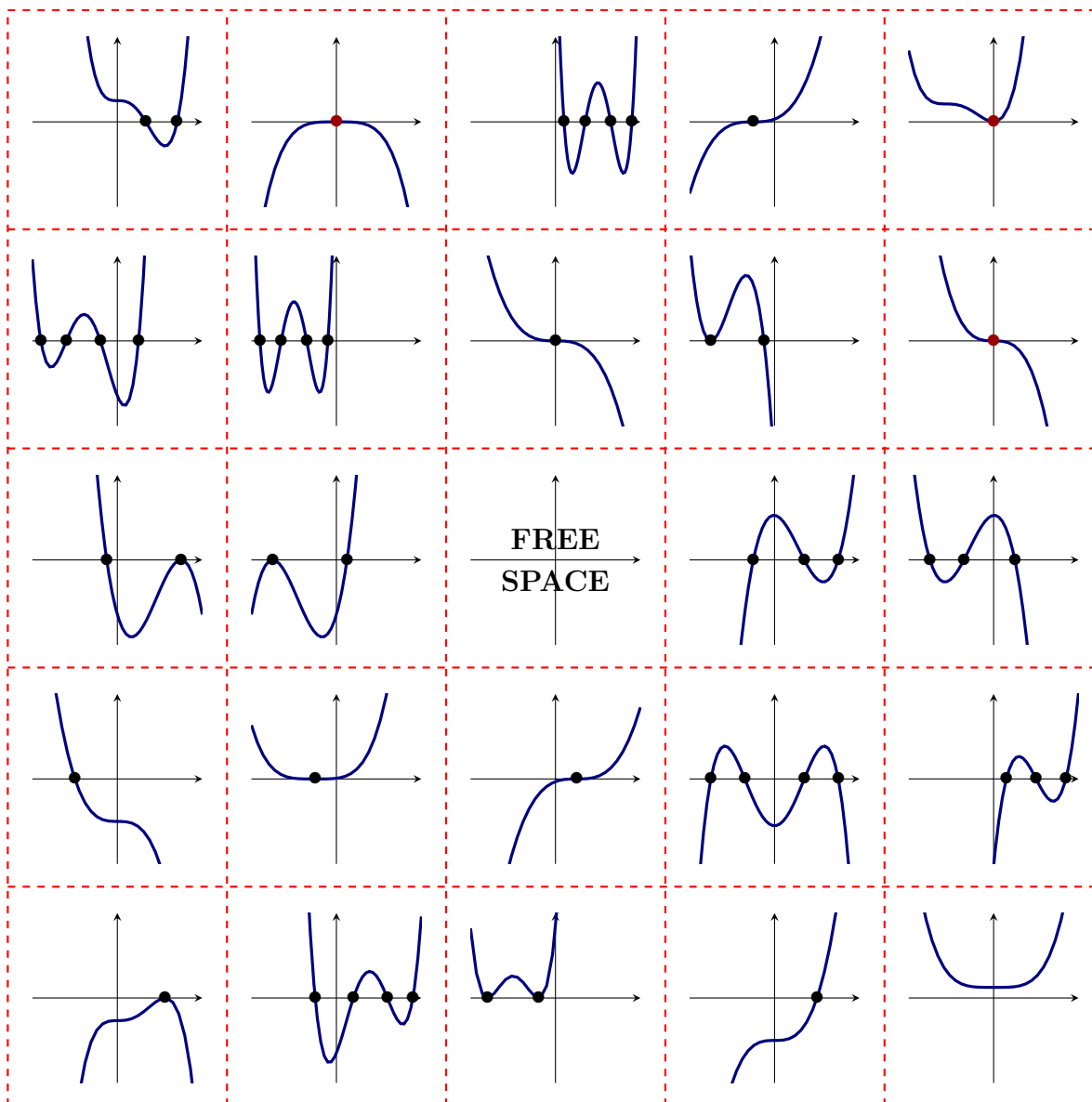
# Zero Bingo Card 49



Each polynomial on this card has degree three or four. All real zeros are shown.

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# Zero Bingo Card 50

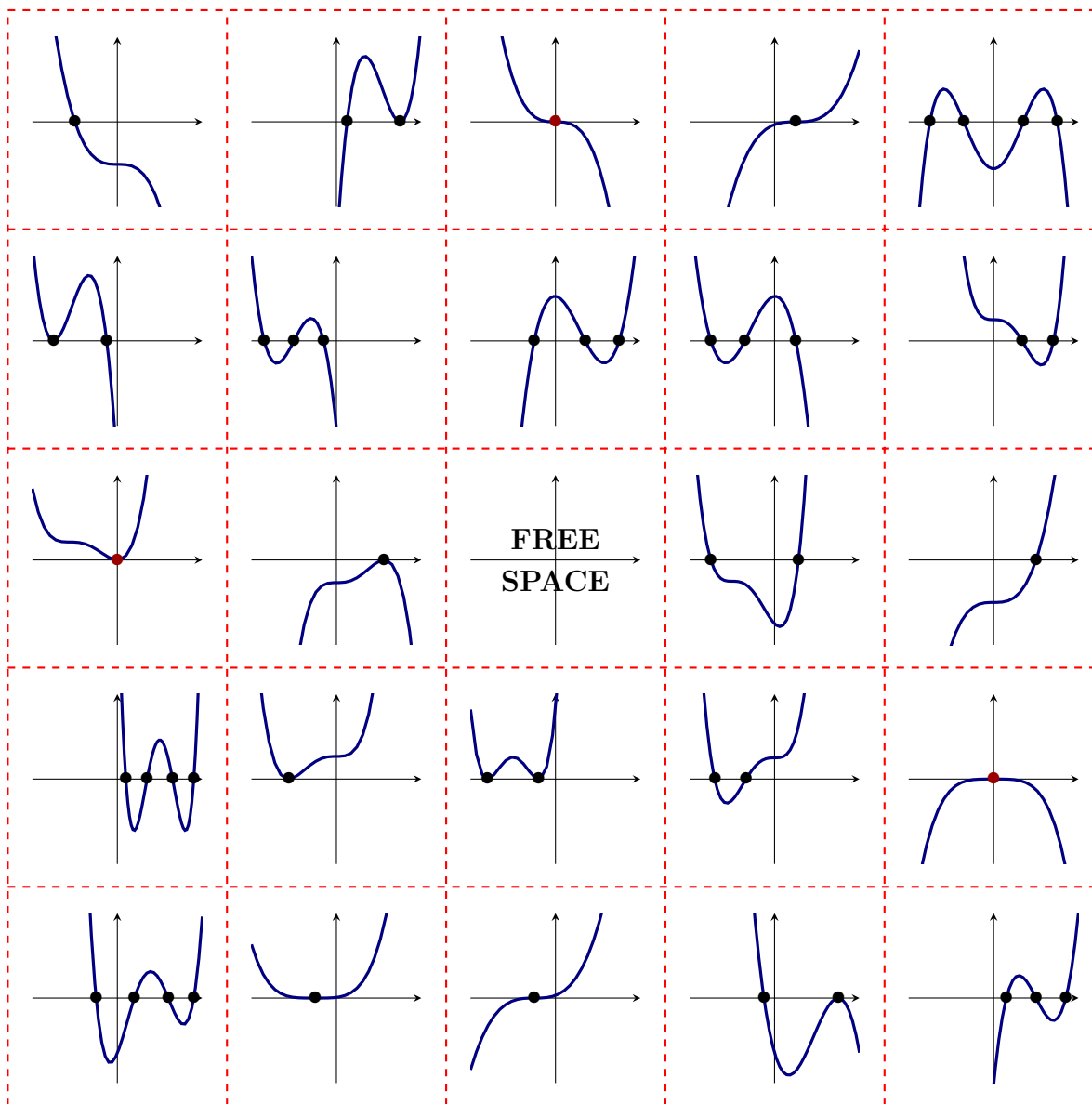


Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016



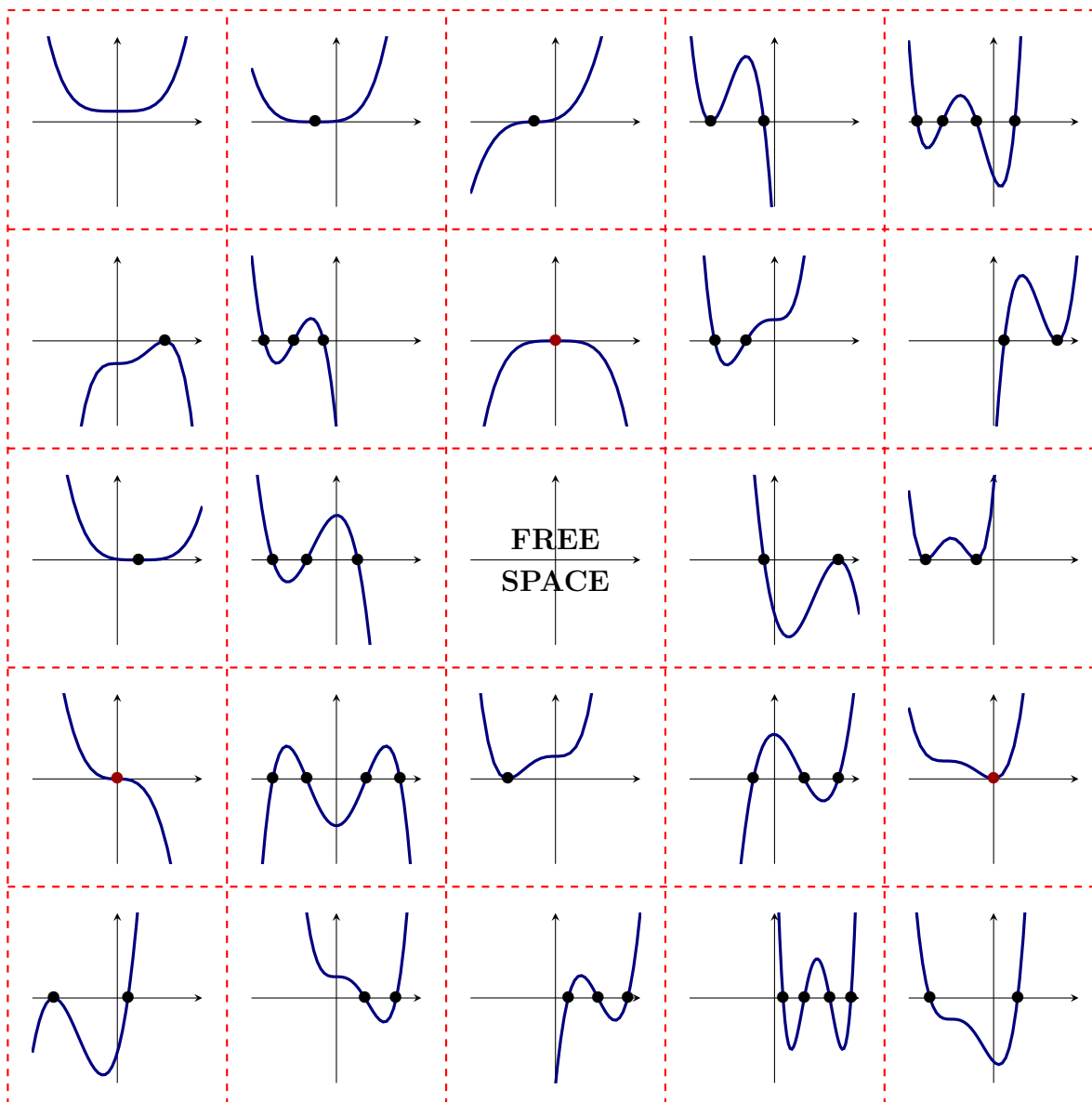
# Zero Bingo Card 51



Each polynomial on this card has degree three or four. All real zeros are shown.

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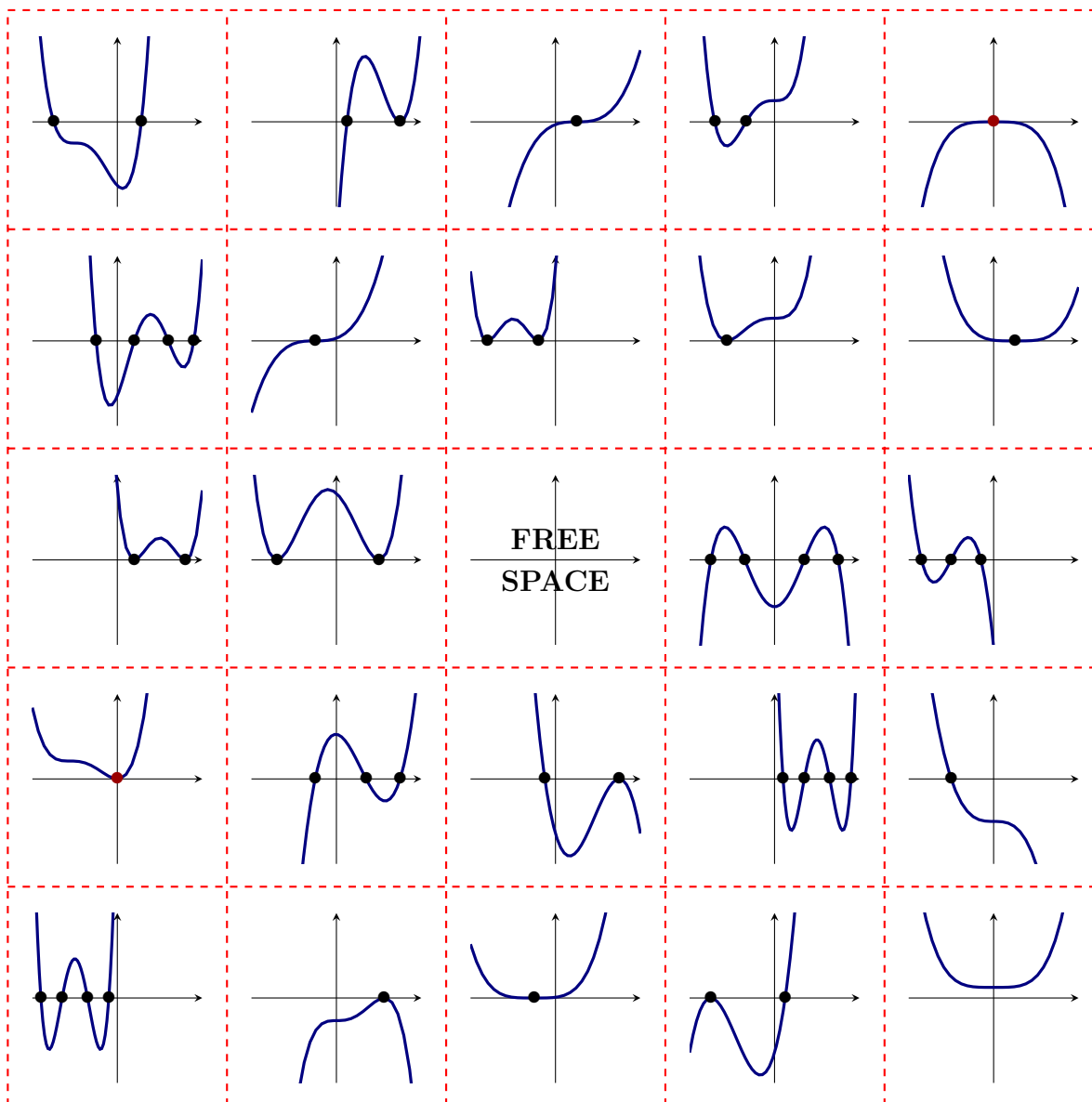
# Zero Bingo Card 52



Each polynomial on this card has degree three or four. All real zeros are shown.

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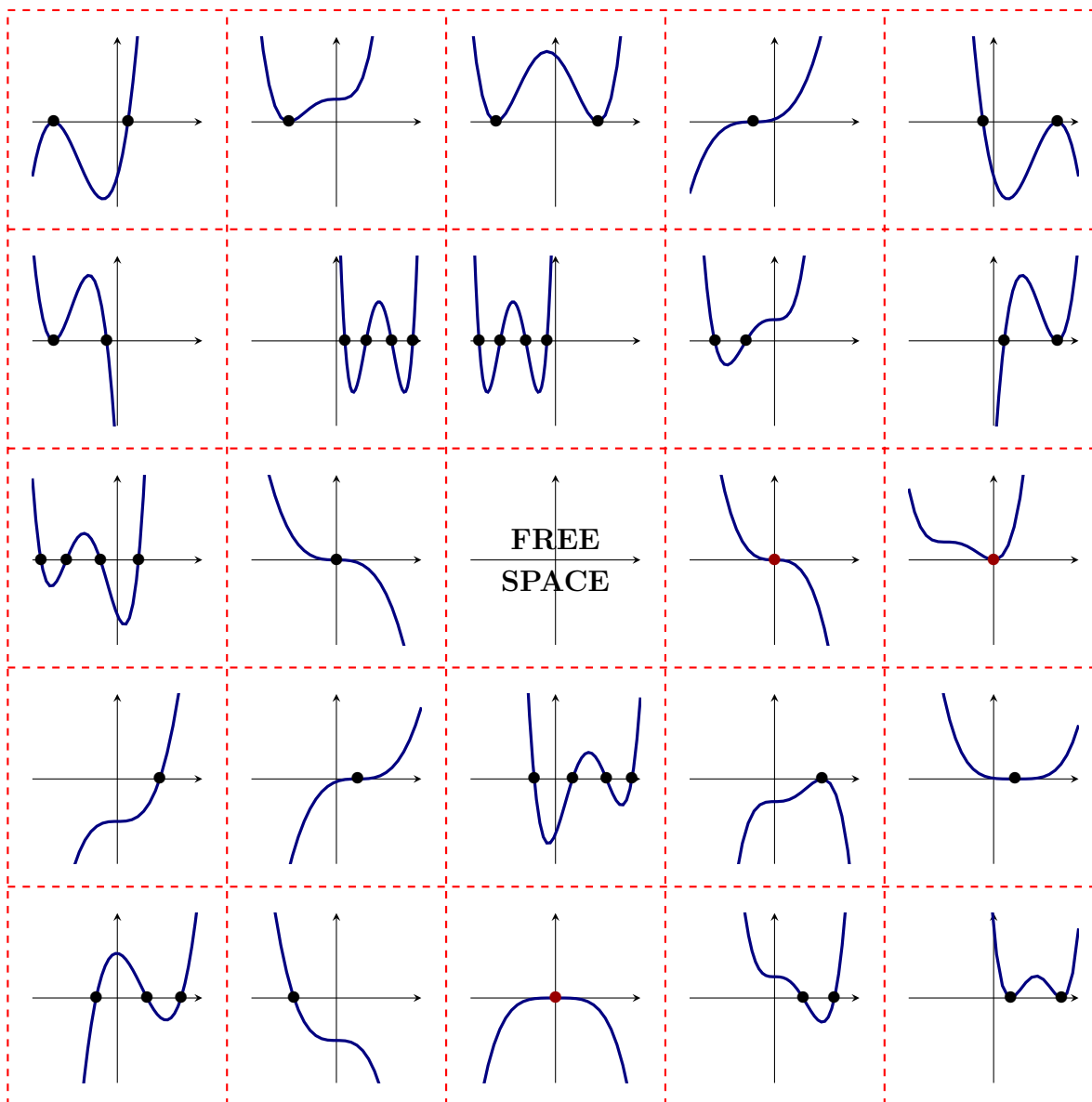
# Zero Bingo Card 53



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

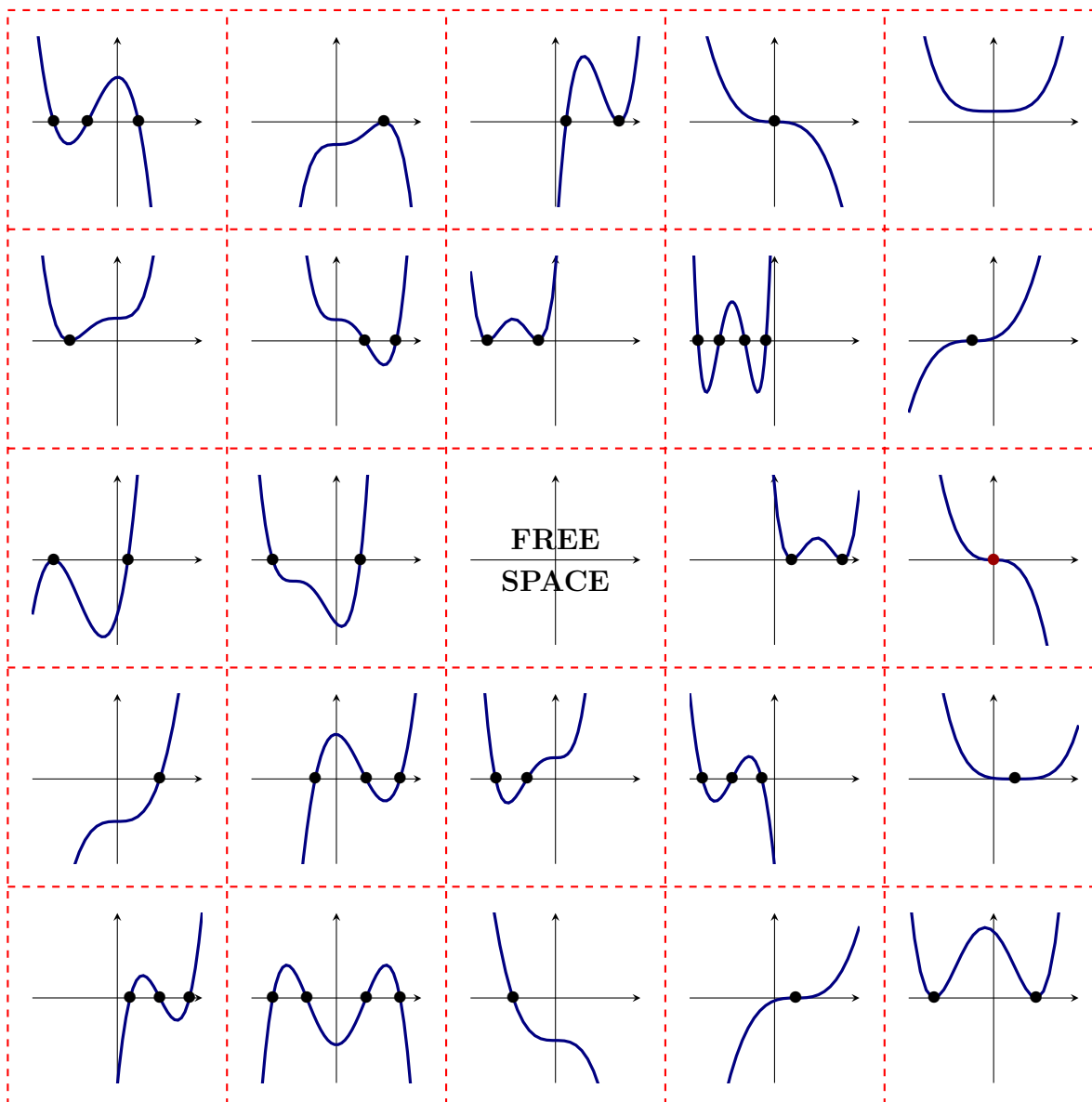
# Zero Bingo Card 54



Each polynomial on this card has degree three or four. All real zeros are shown.

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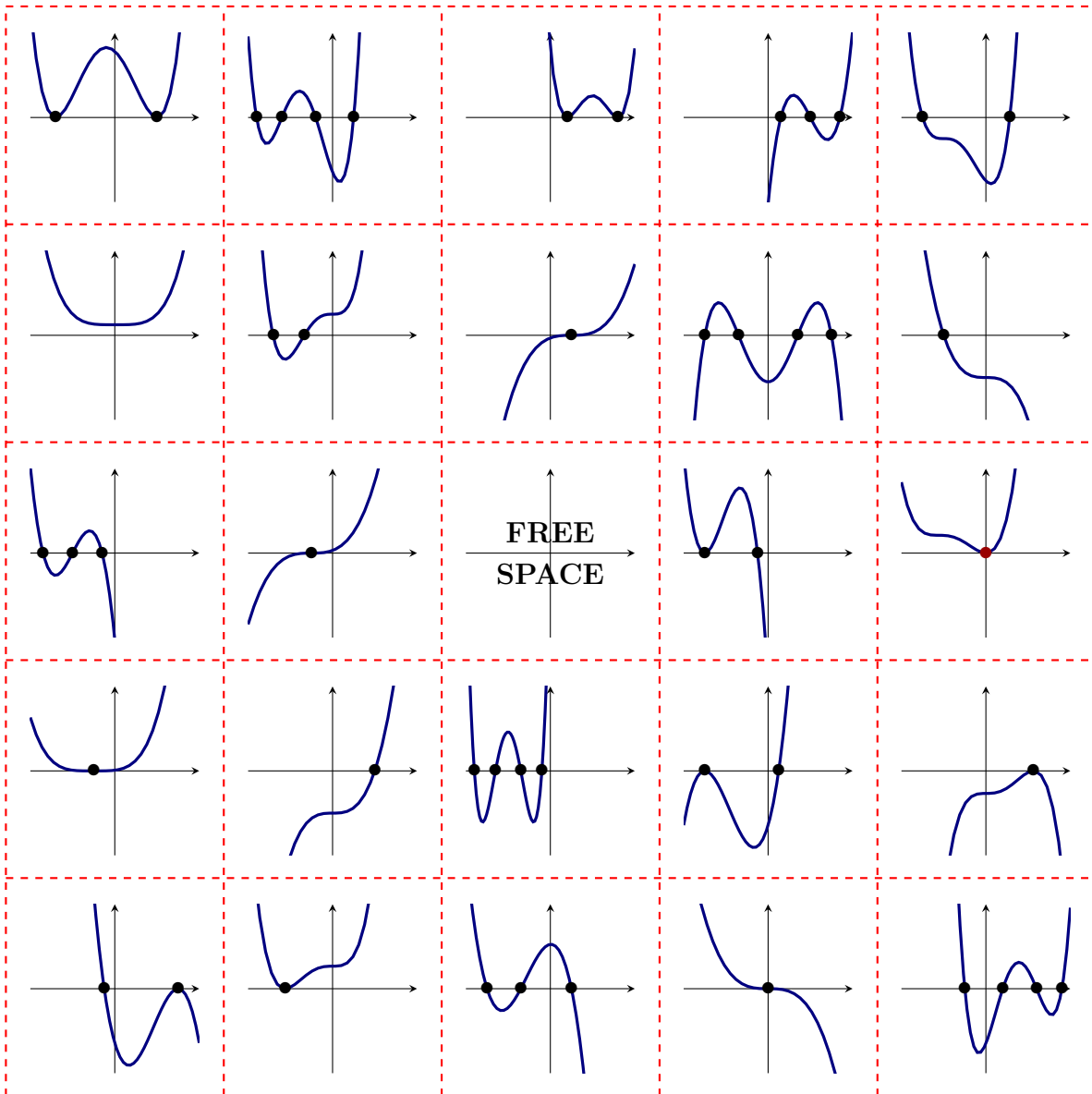
# Zero Bingo Card 55



Each polynomial on this card has degree three or four. All real zeros are shown.

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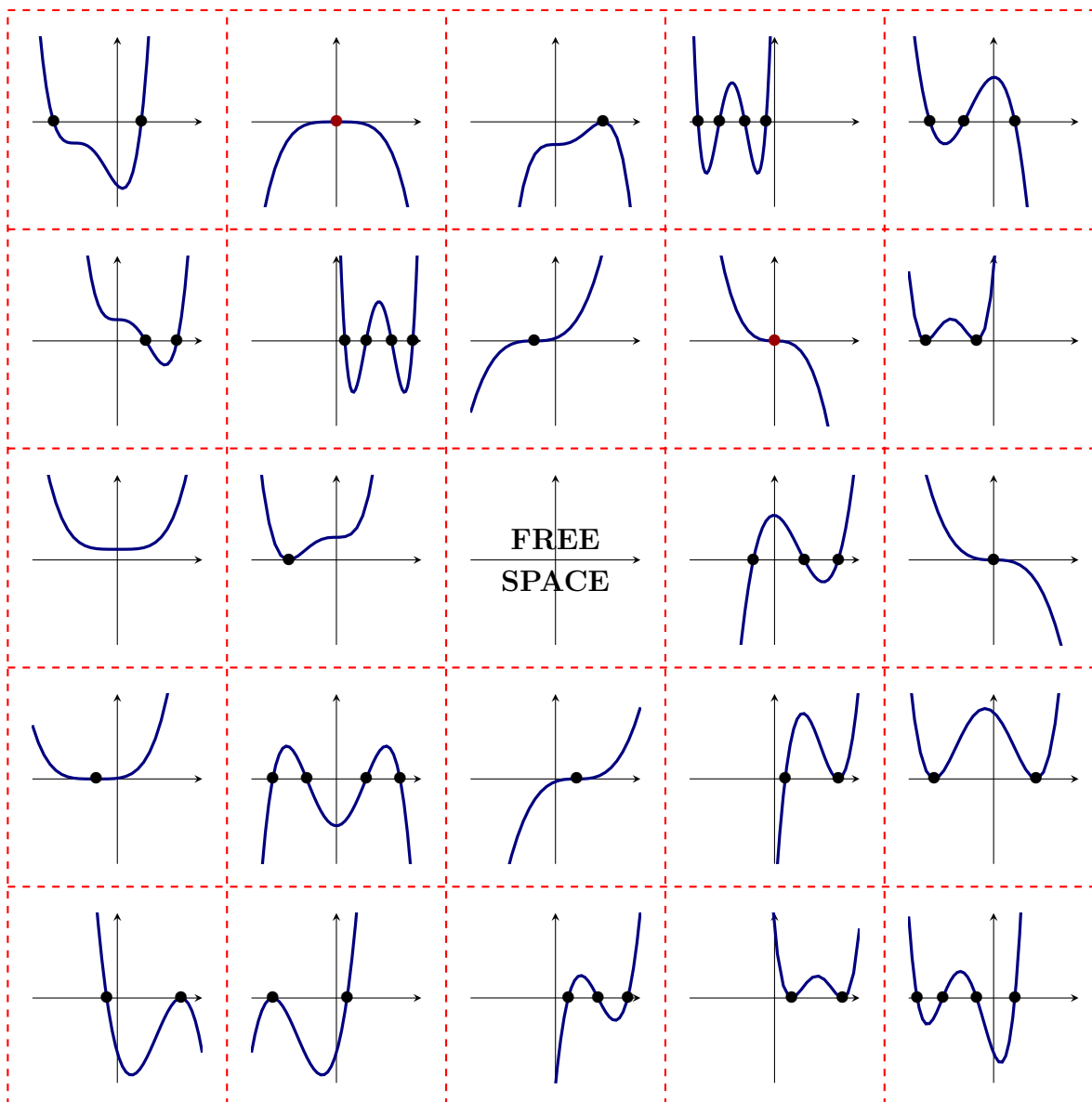
# Zero Bingo Card 56



Each polynomial on this card has degree three or four. All real zeros are shown.

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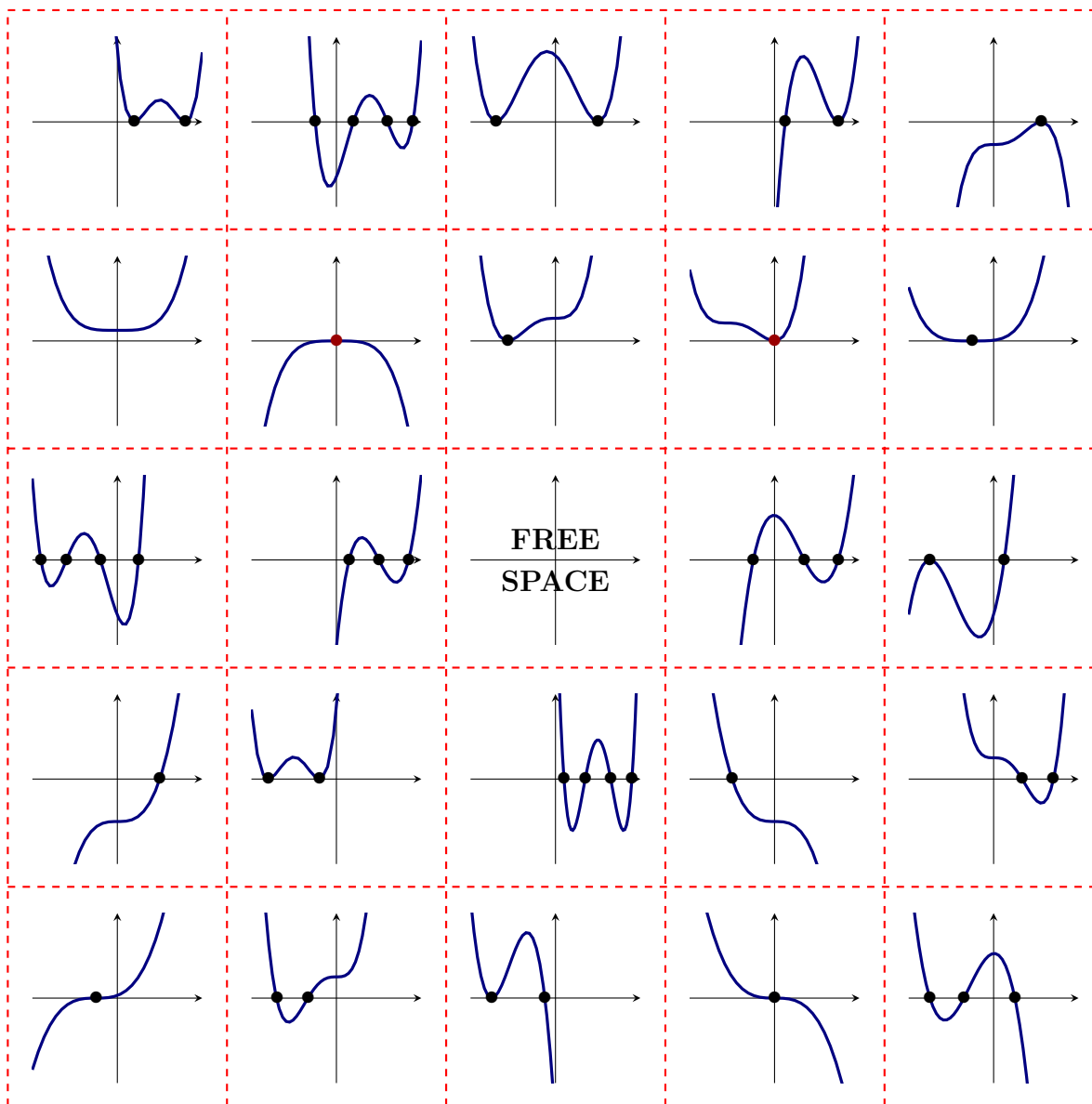
# Zero Bingo Card 57



Each polynomial on this card has degree three or four. All real zeros are shown.

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# Zero Bingo Card 58

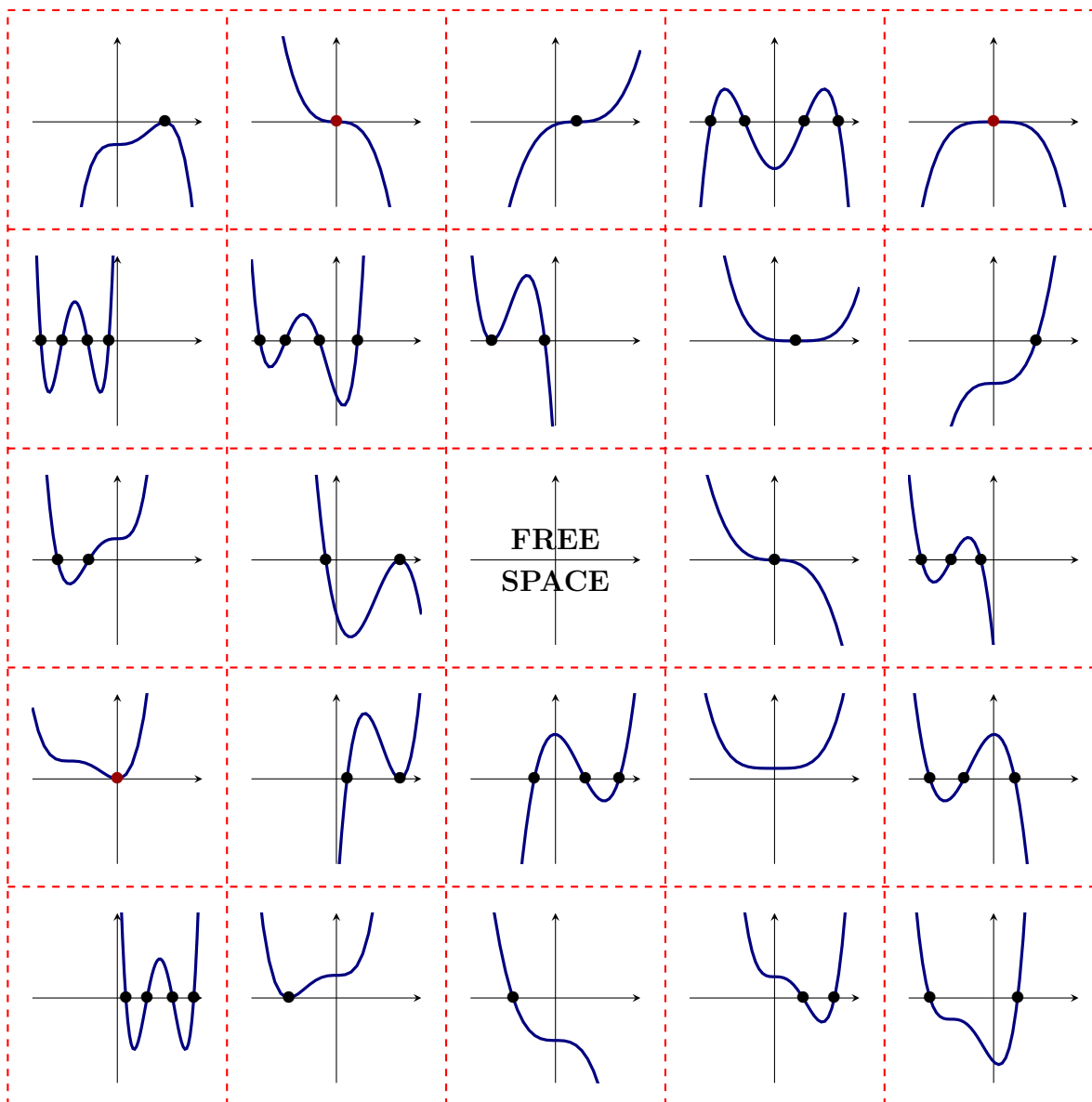


Each polynomial on this card has degree three or four. All real zeros are shown.

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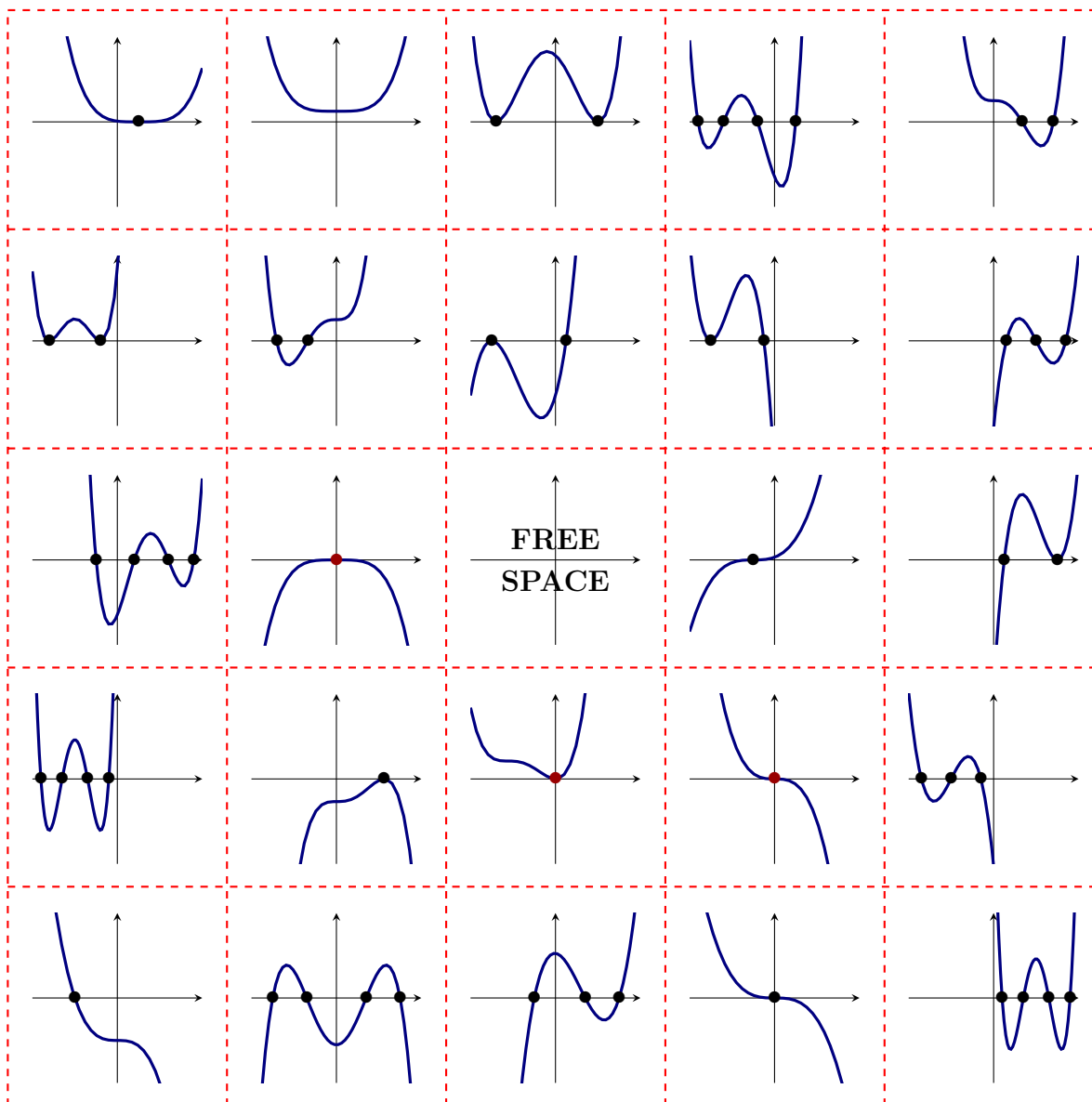
# Zero Bingo Card 59



Each polynomial on this card has degree three or four. All real zeros are shown.

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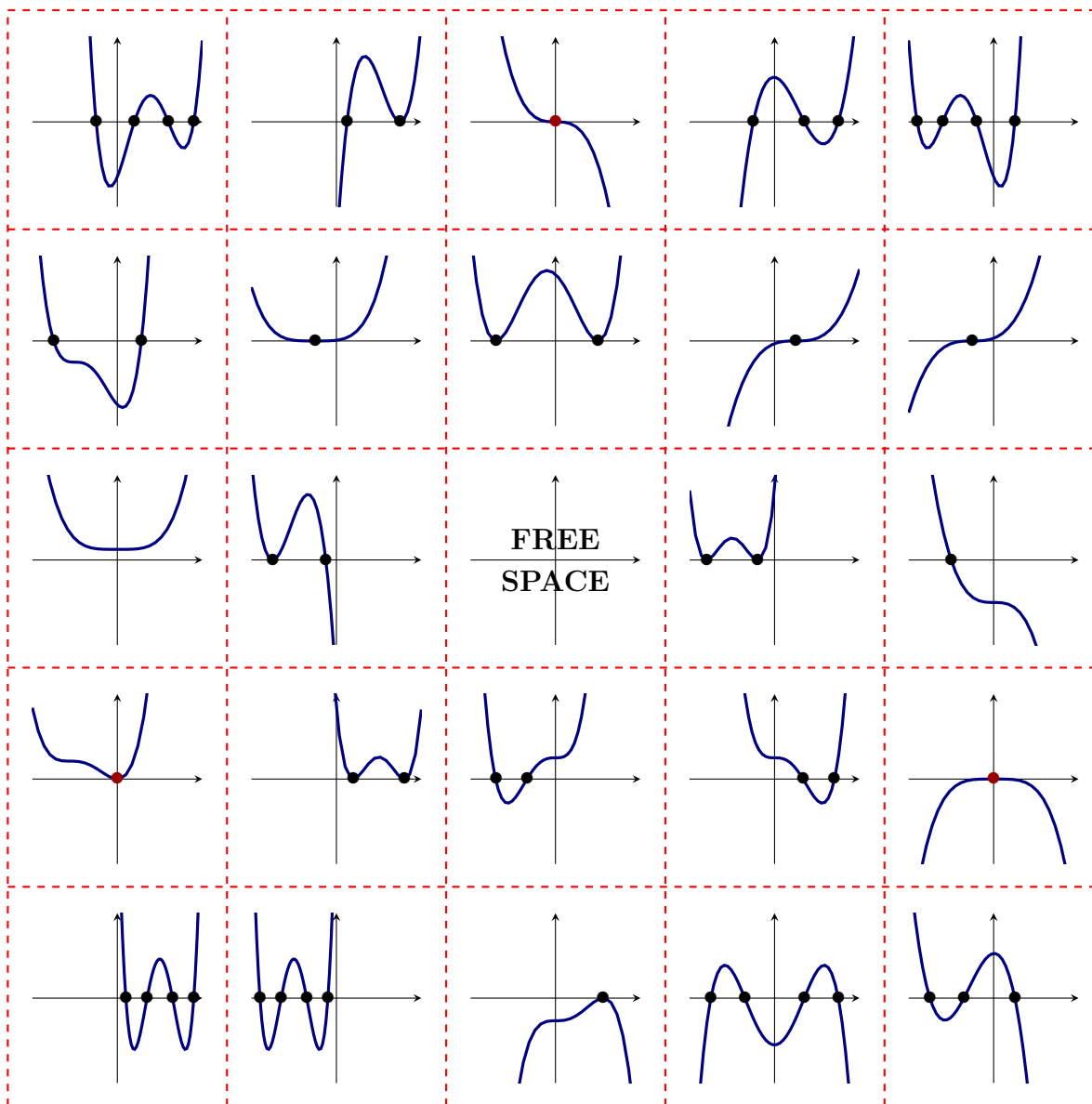
# Zero Bingo Card 60



Each polynomial on this card has degree three or four. All real zeros are shown.

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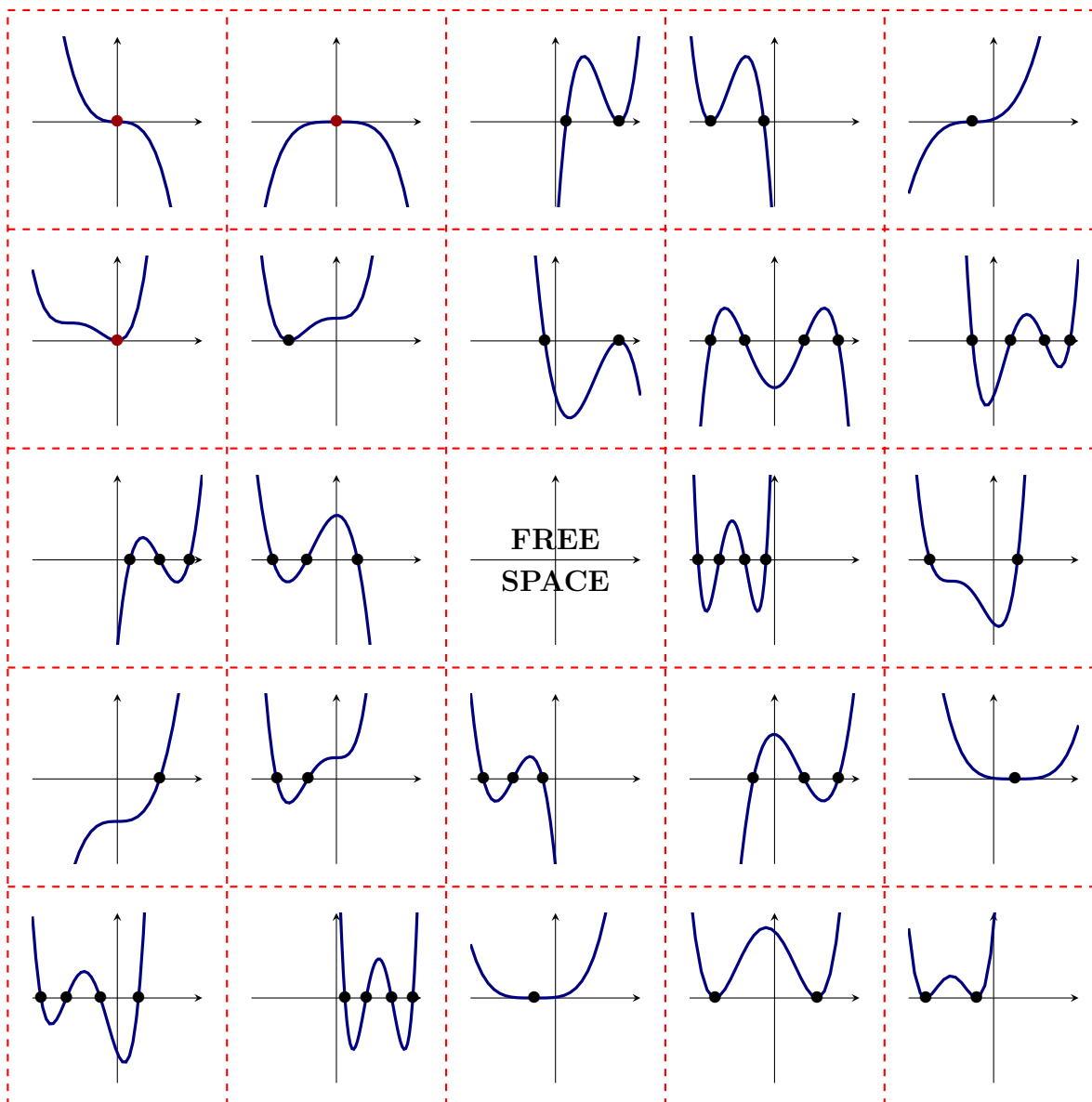
# Zero Bingo Card 61



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

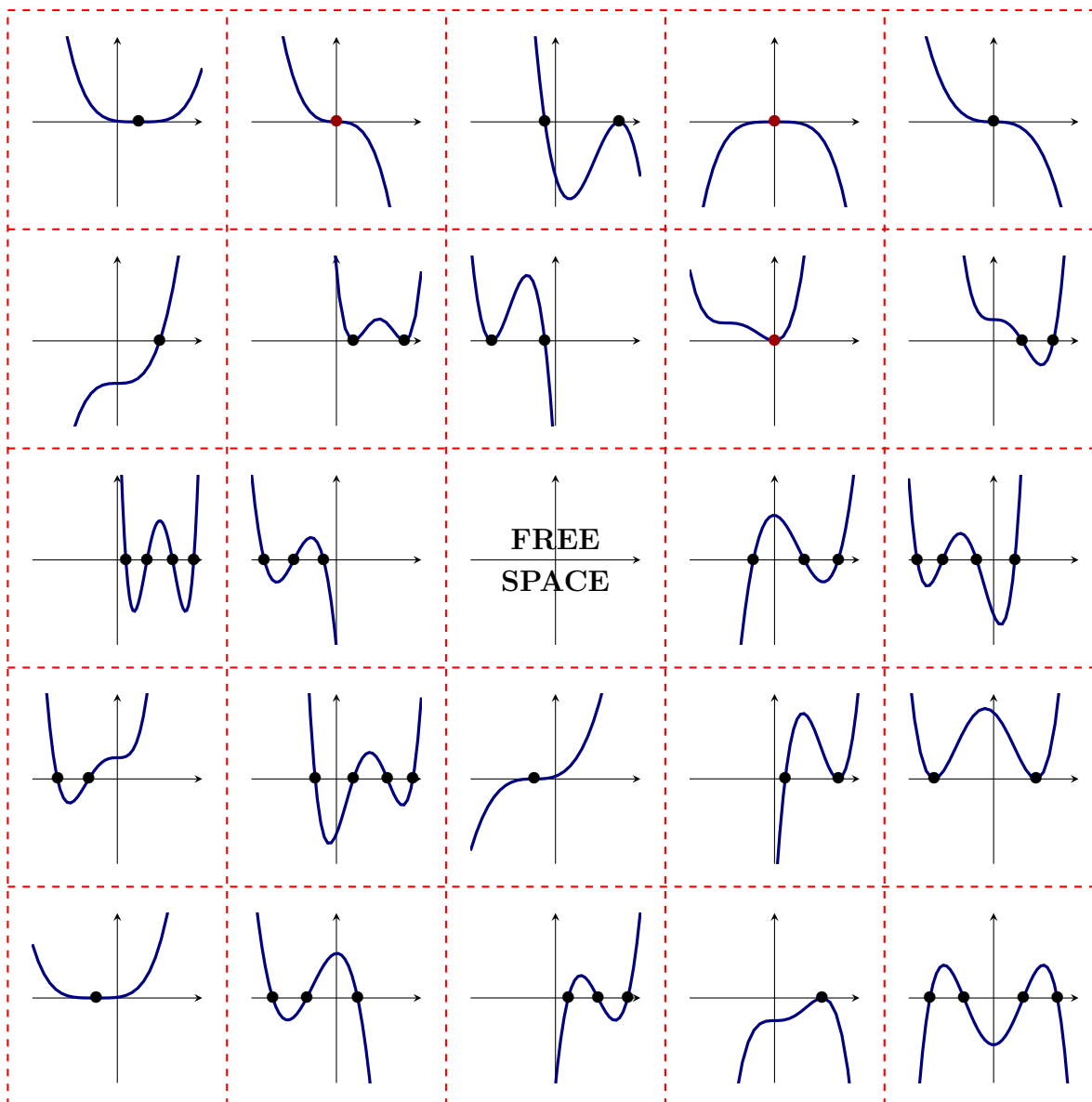
# Zero Bingo Card 62



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

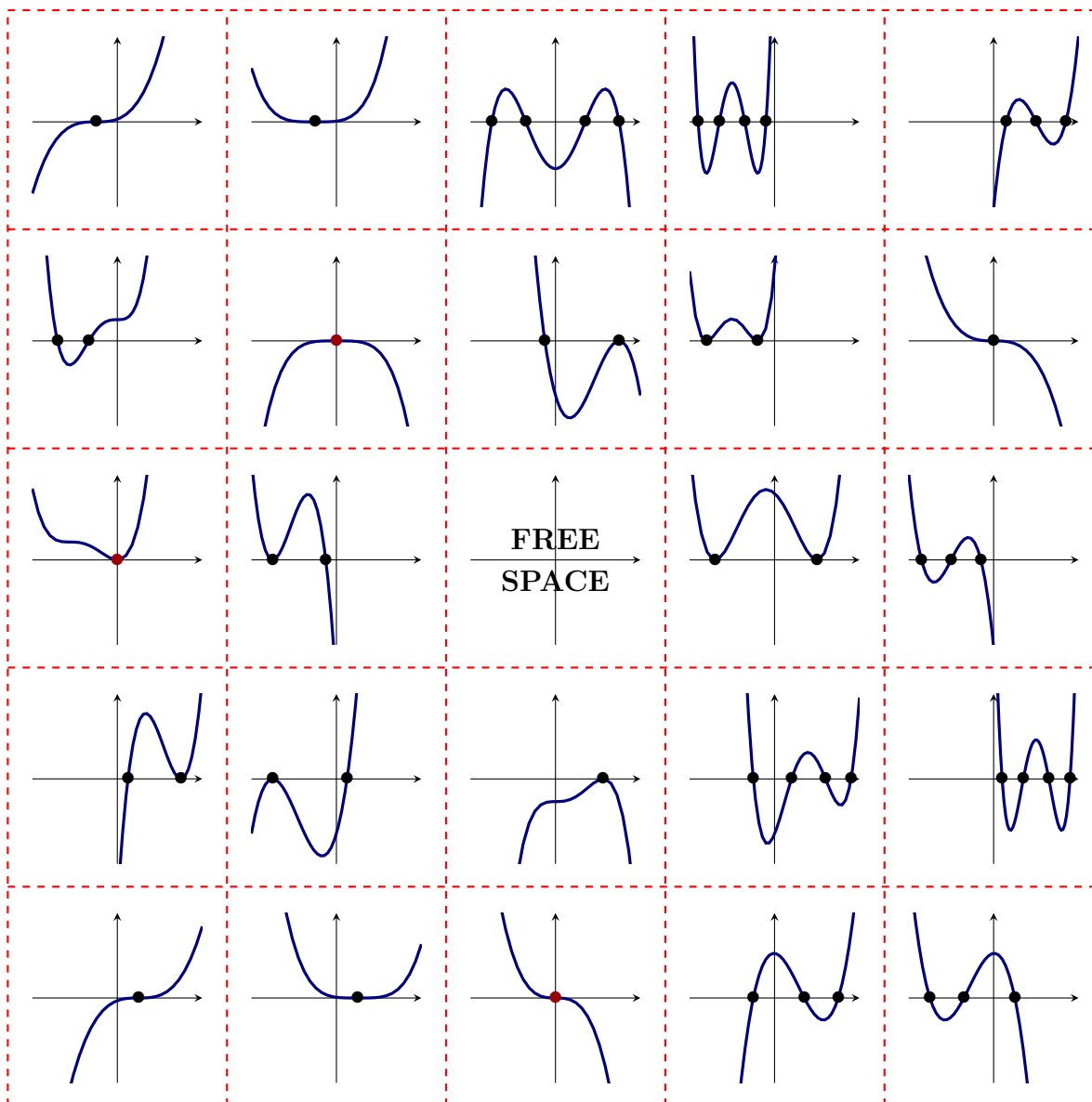
# Zero Bingo Card 63



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

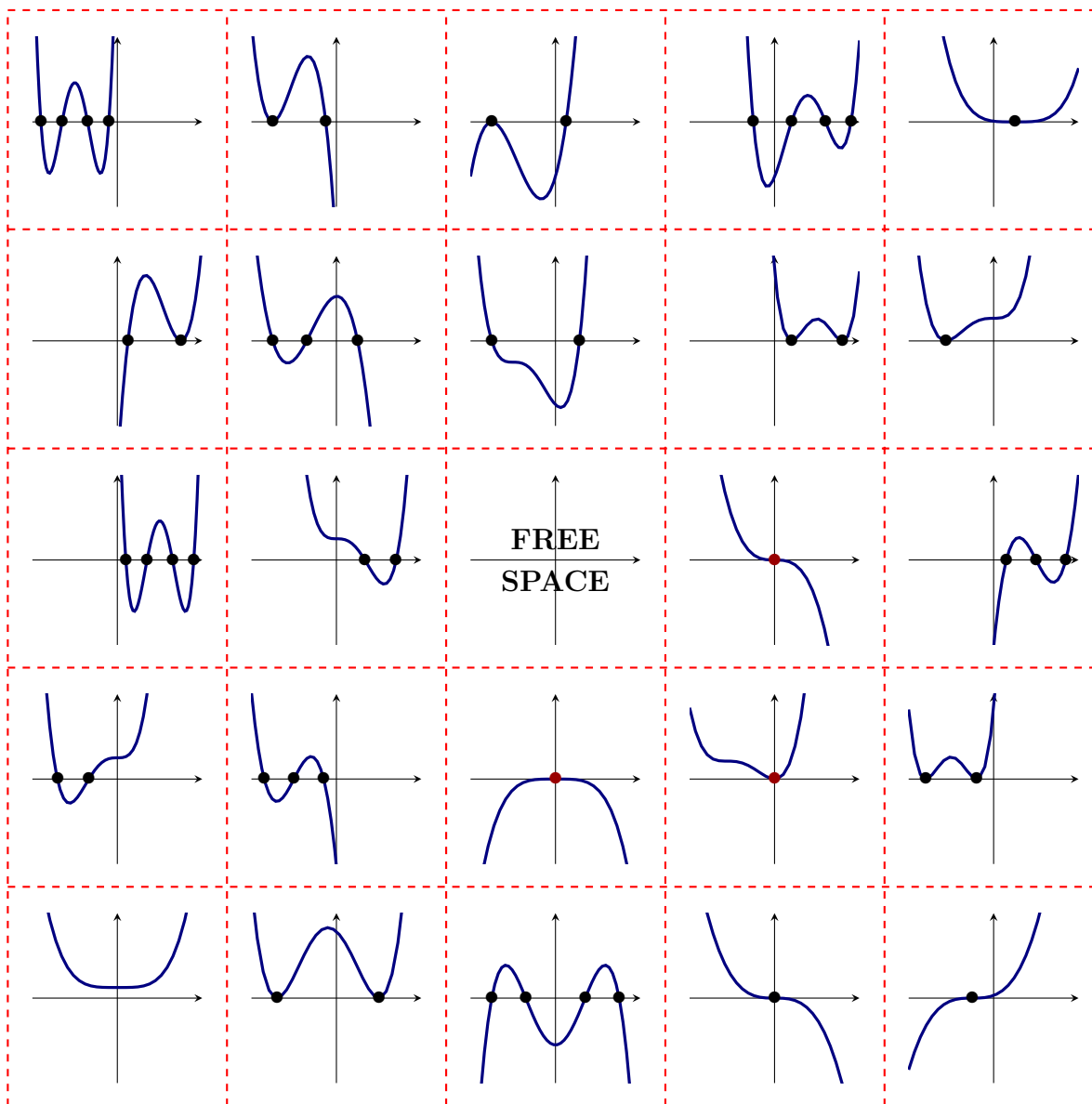
# Zero Bingo Card 64



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

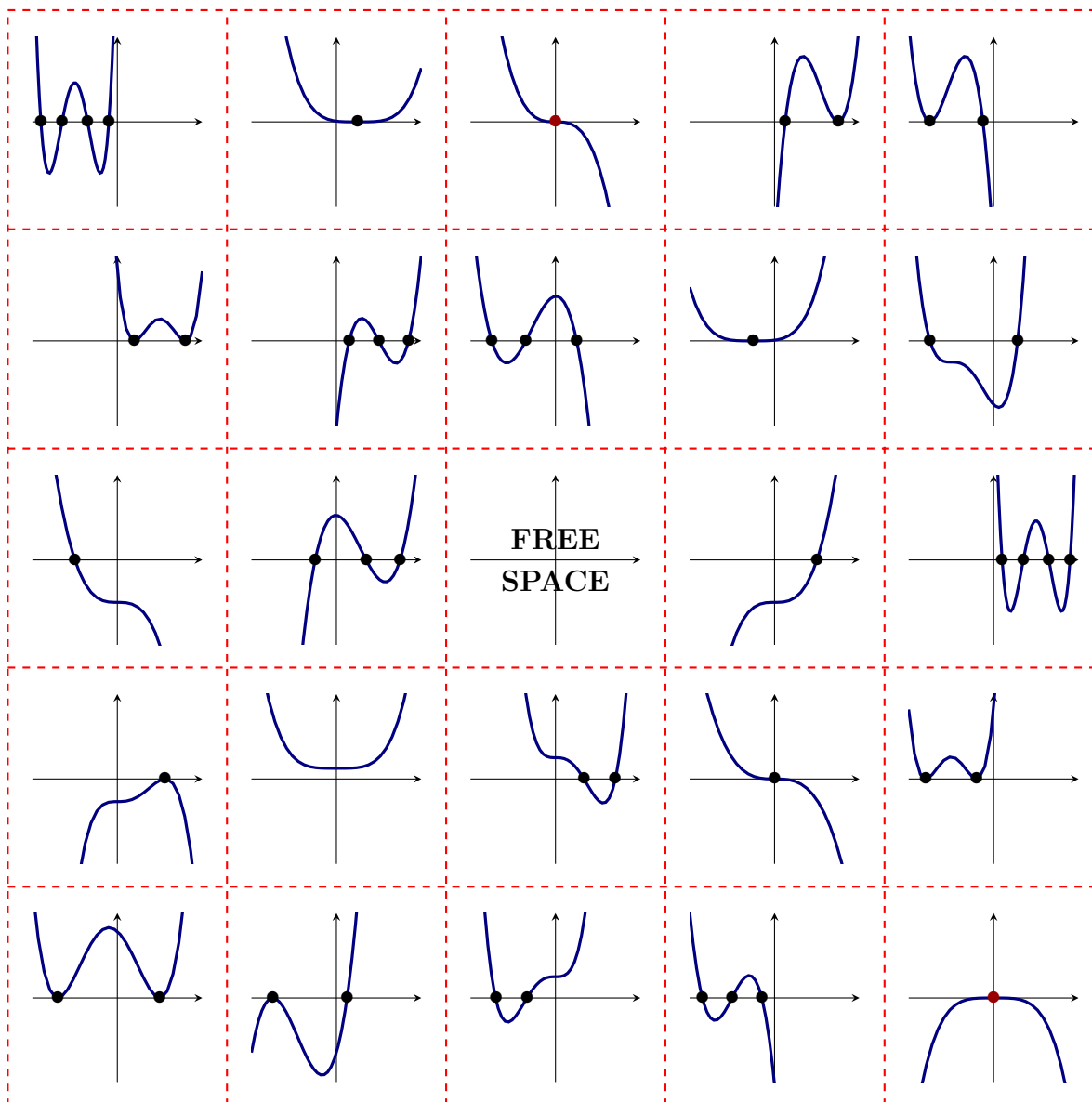
# Zero Bingo Card 65



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

# Zero Bingo Card 66

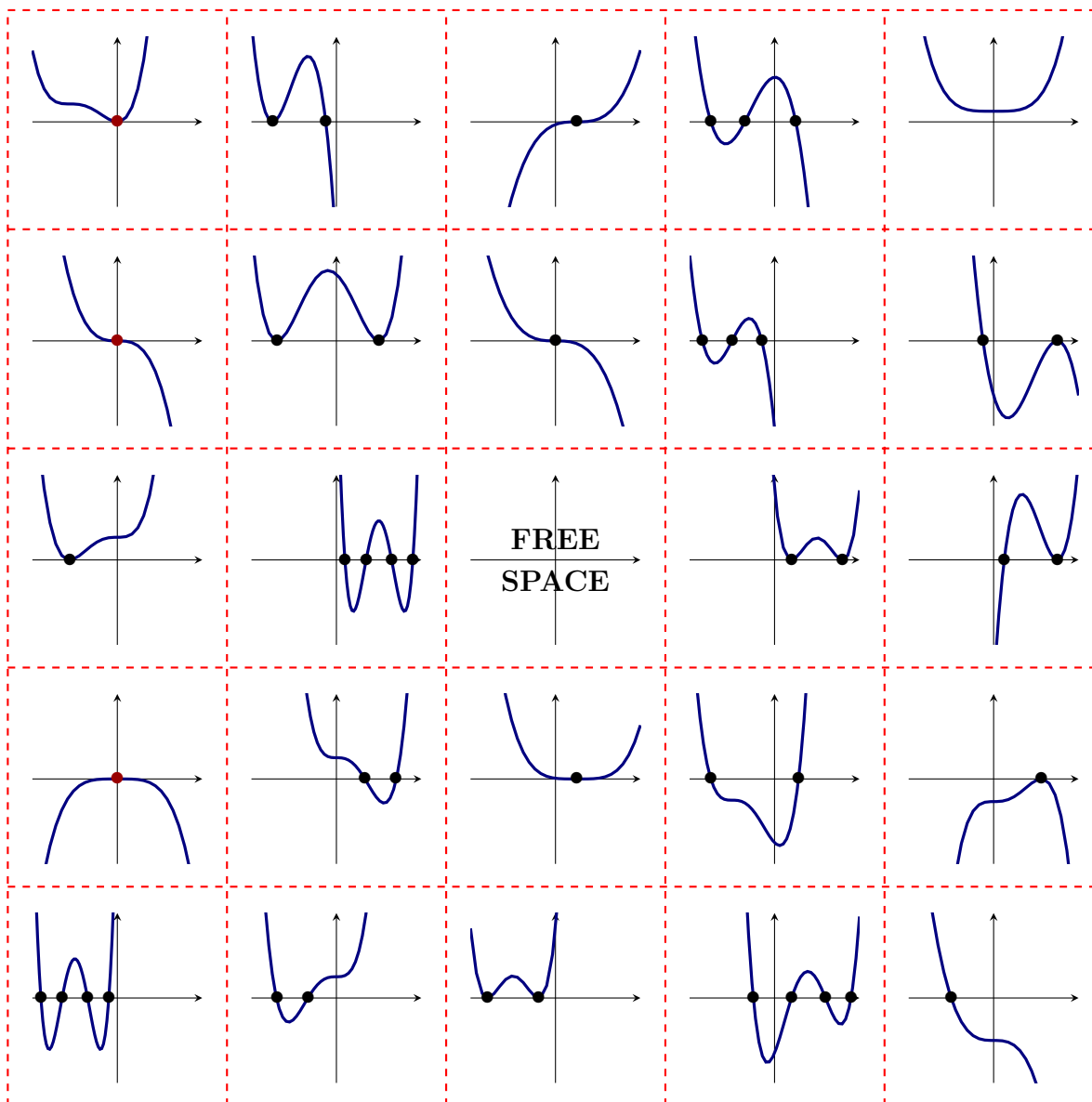


Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016



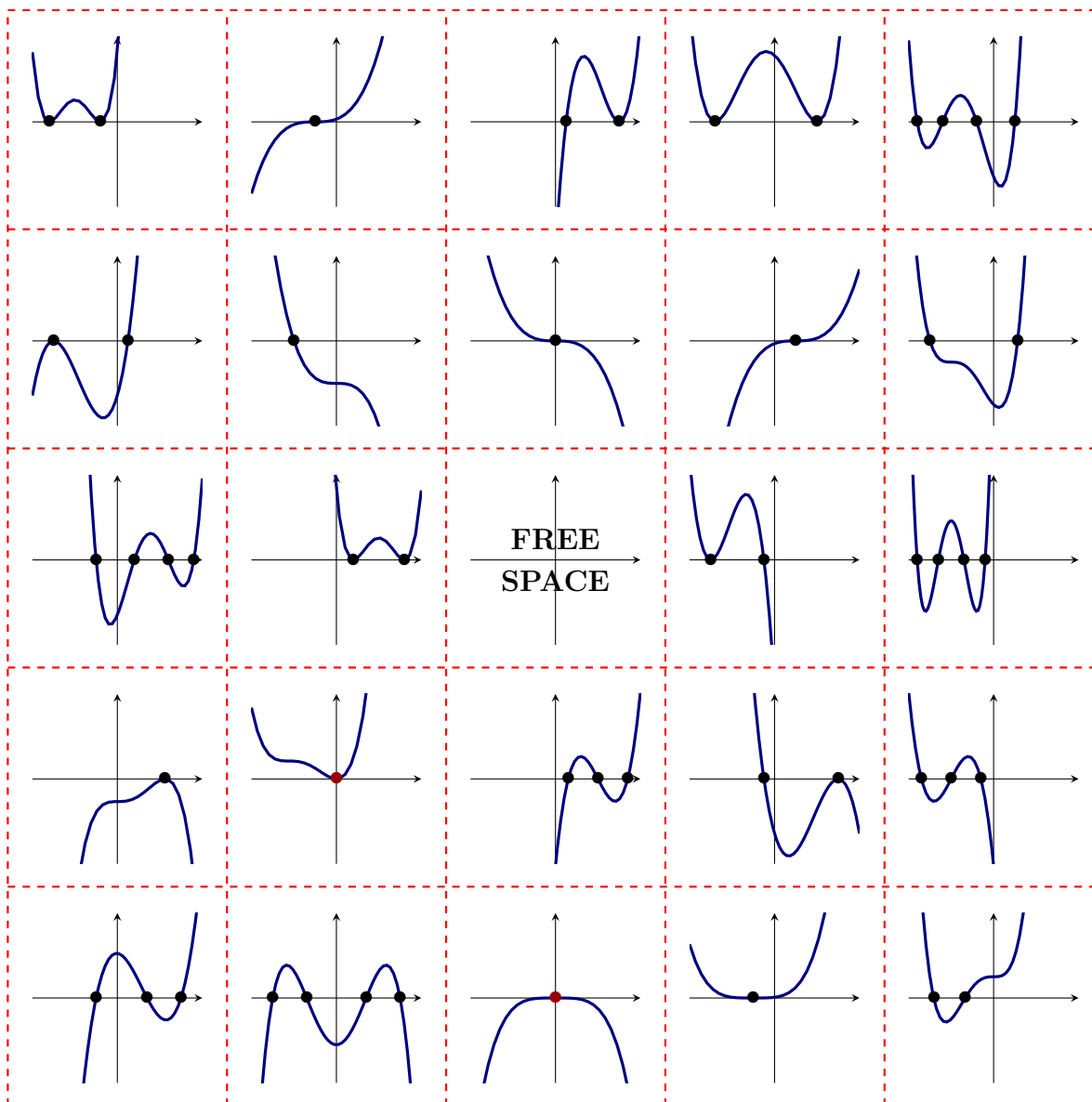
# Zero Bingo Card 67



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

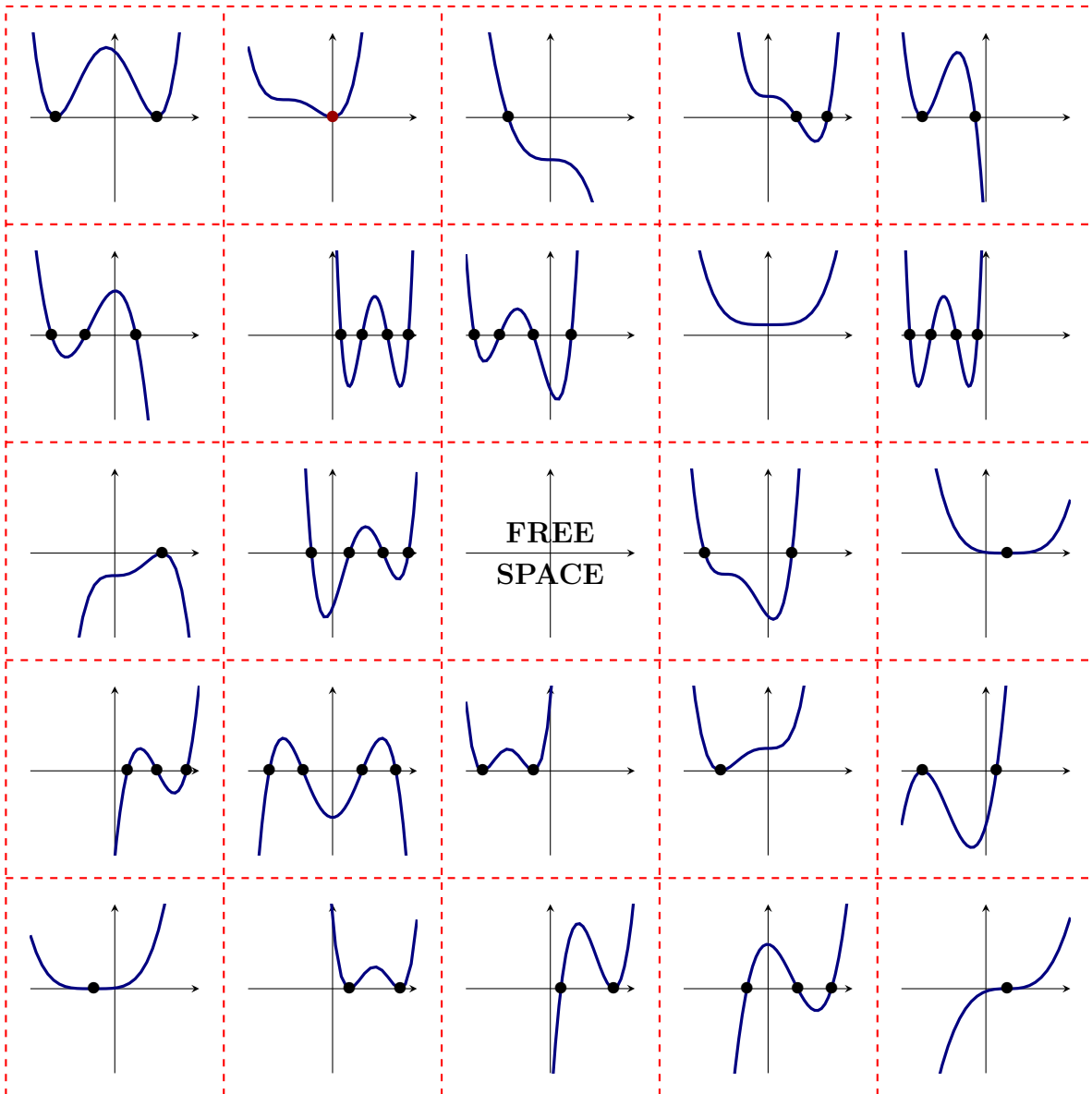
# Zero Bingo Card 68



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

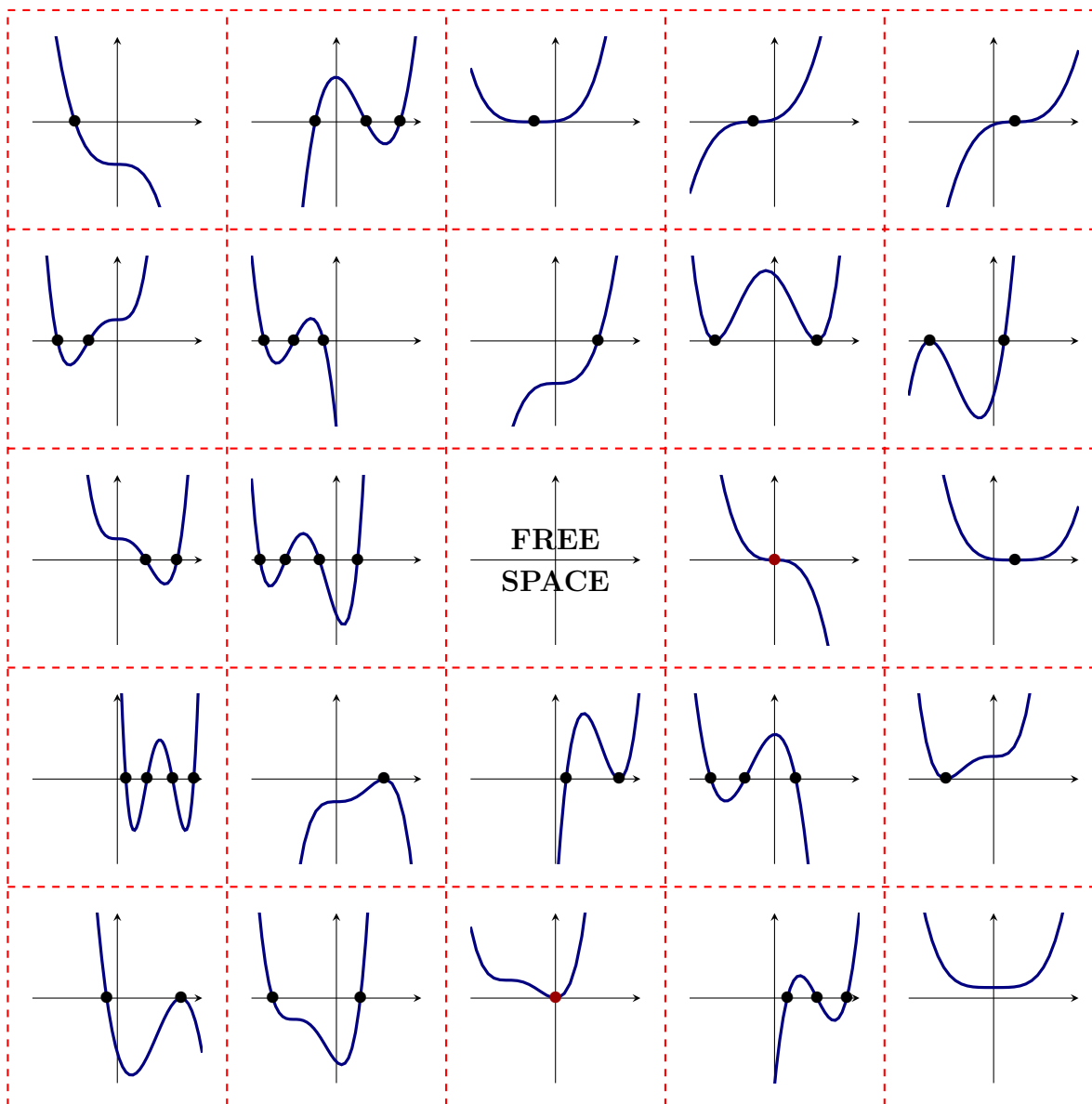
# Zero Bingo Card 69



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

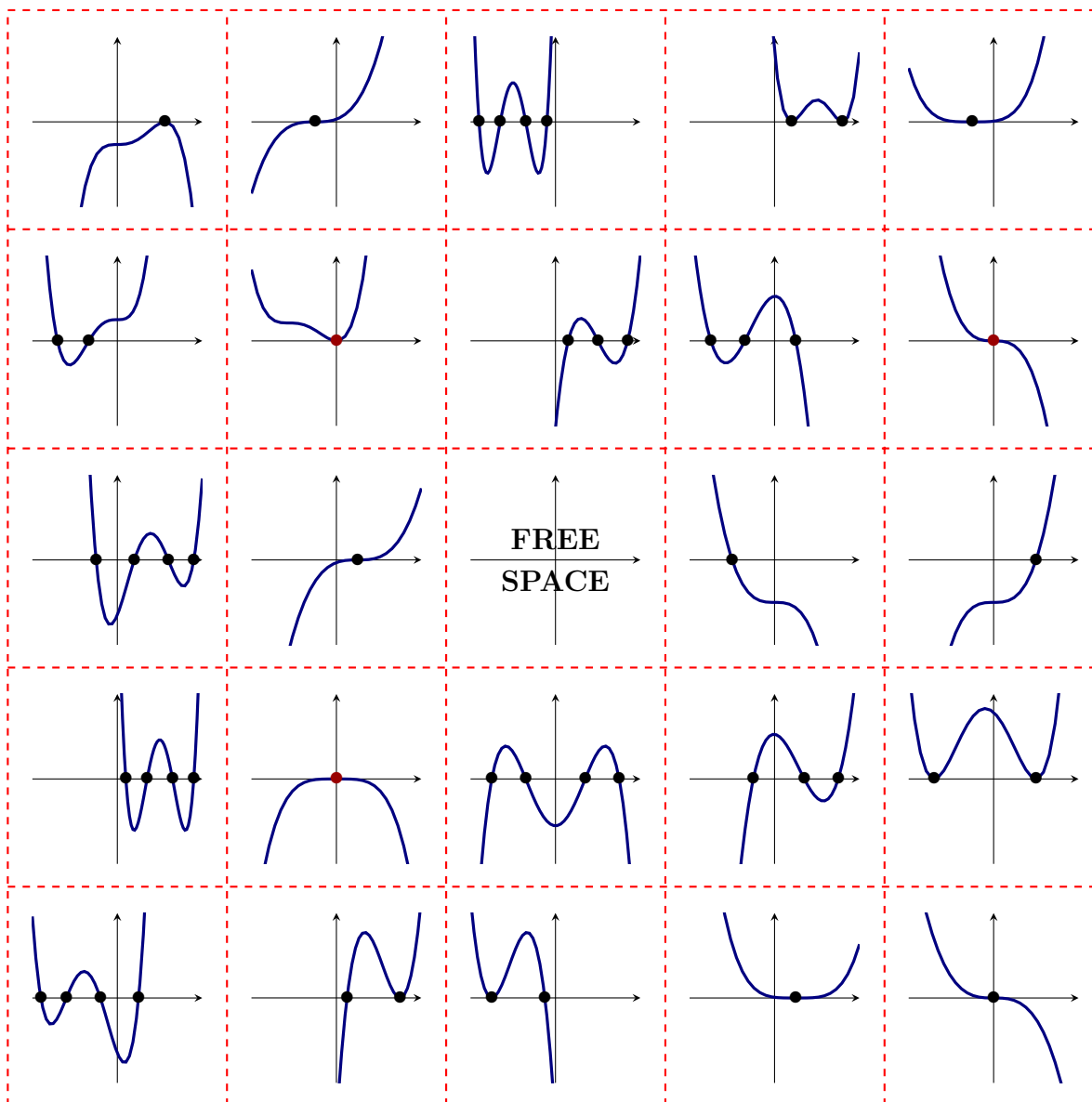
# Zero Bingo Card 70



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

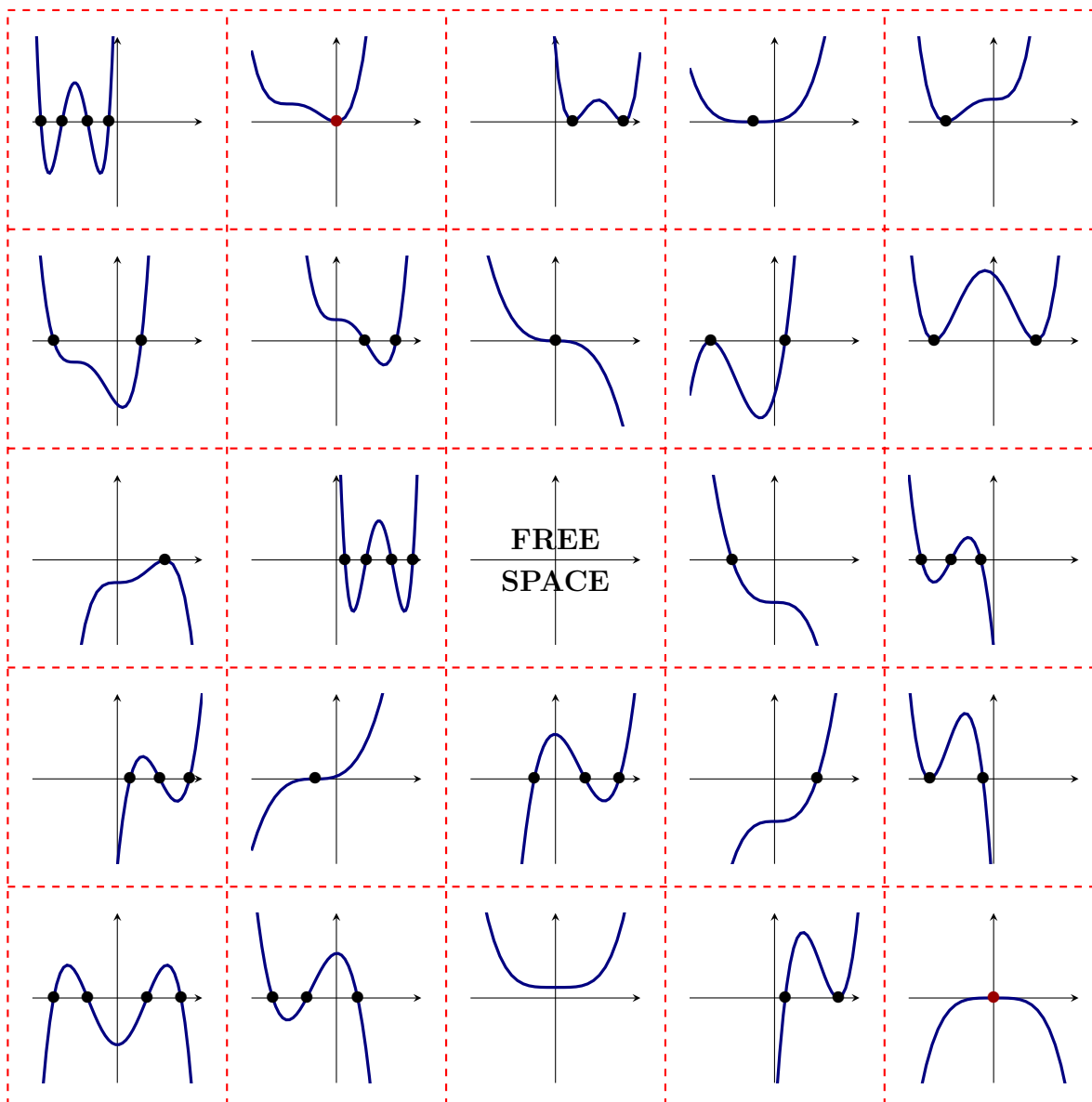
# Zero Bingo Card 71



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

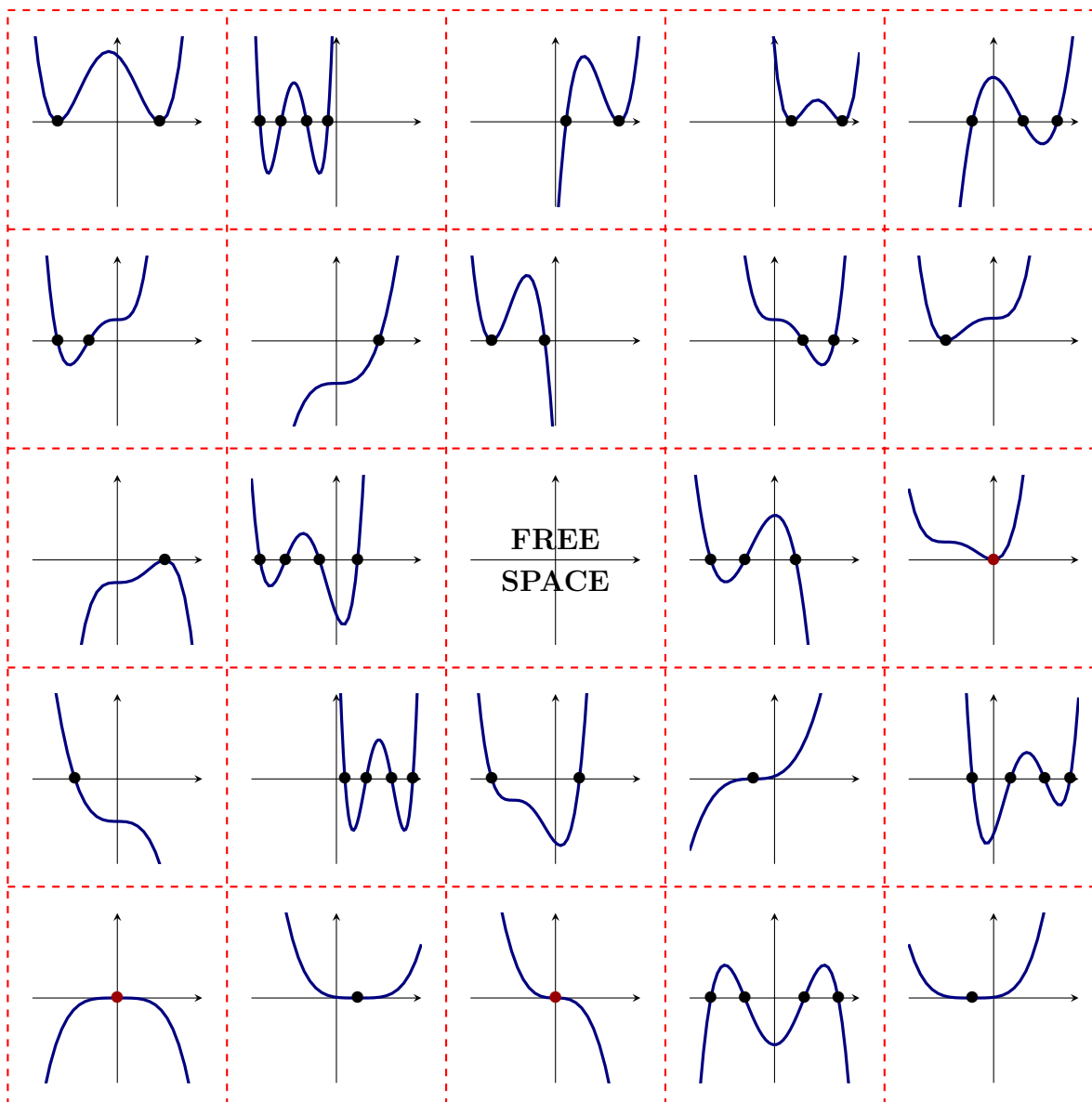
# Zero Bingo Card 72



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

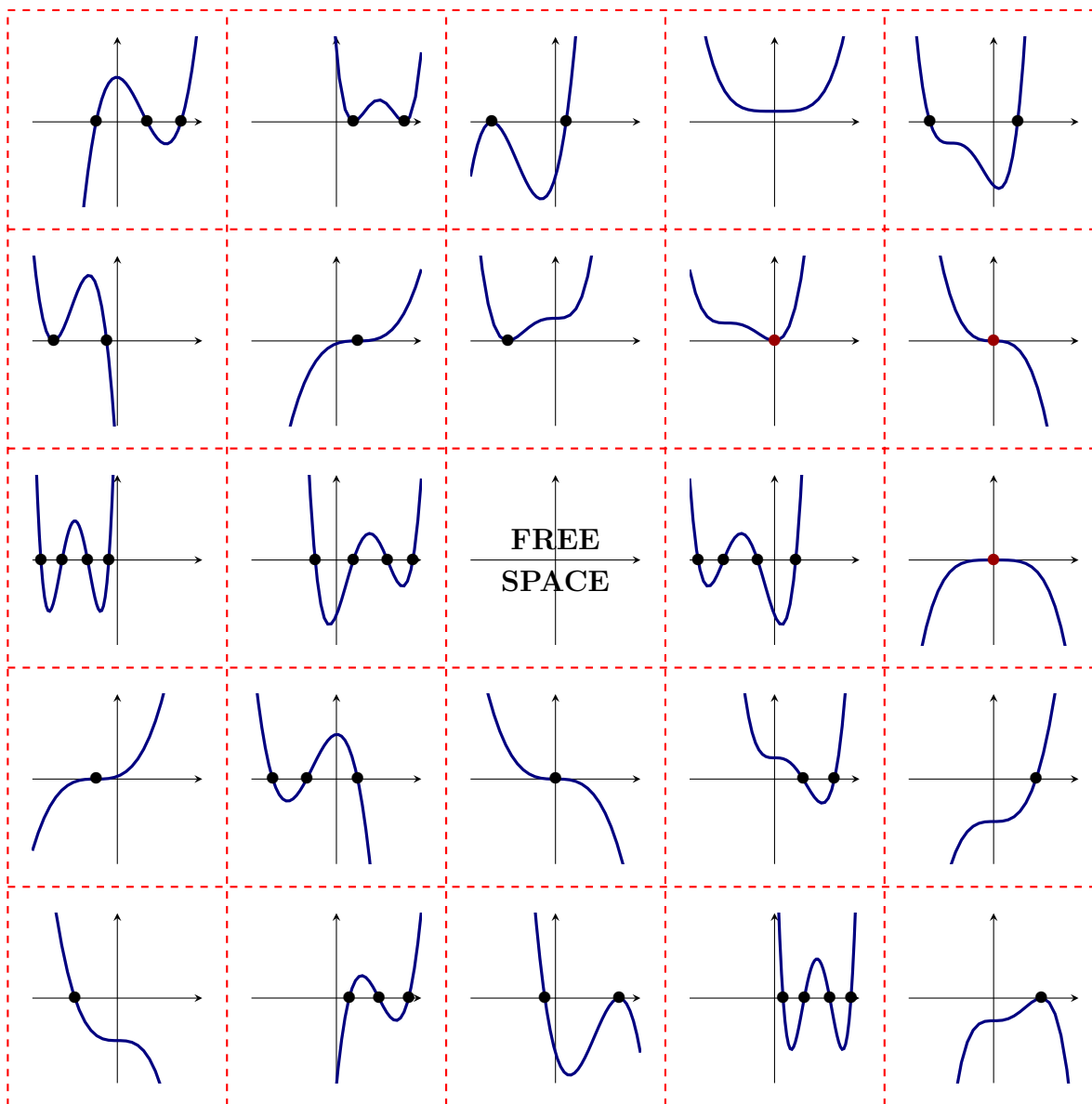
# Zero Bingo Card 73



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

# Zero Bingo Card 74

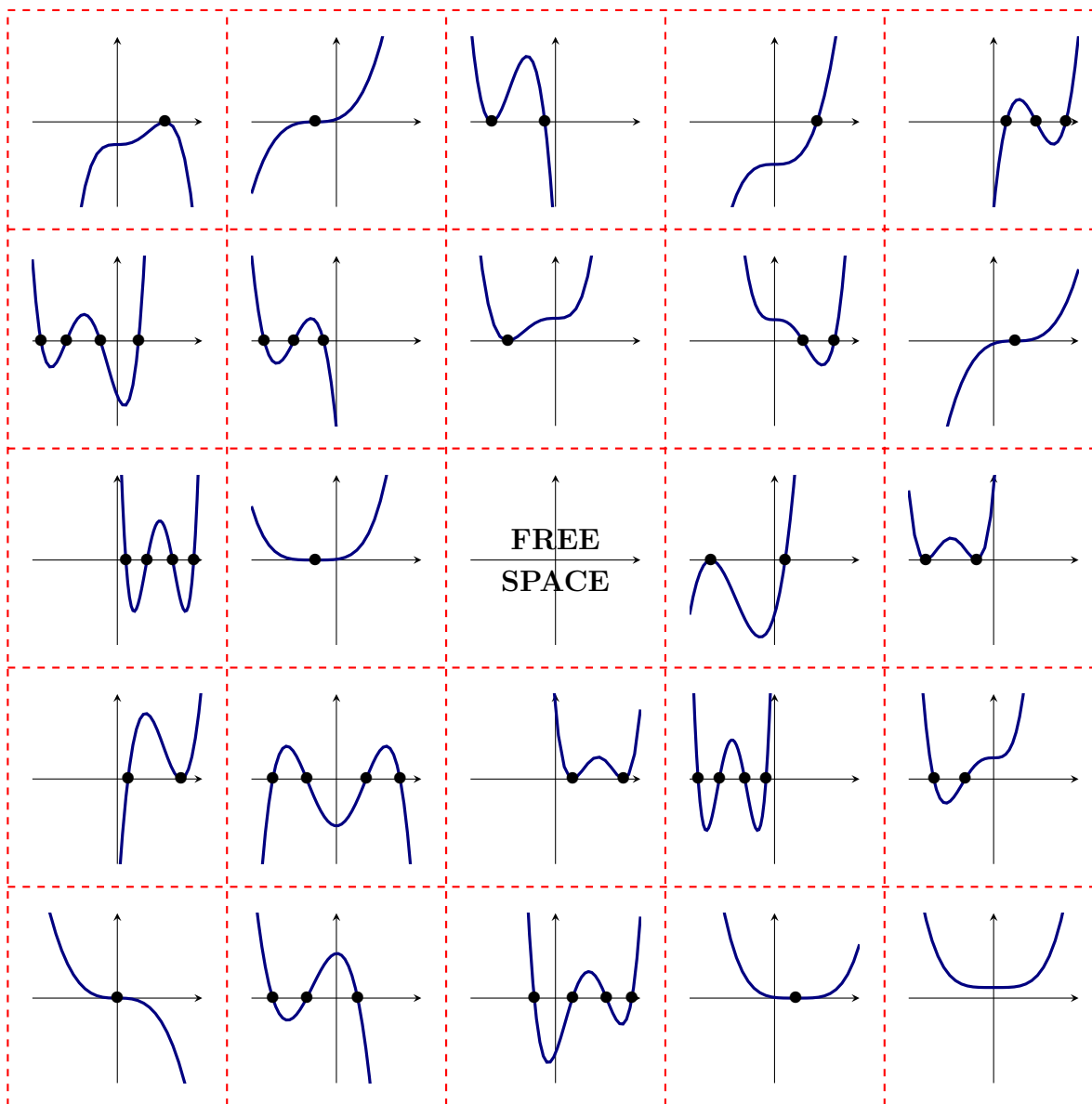


Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016



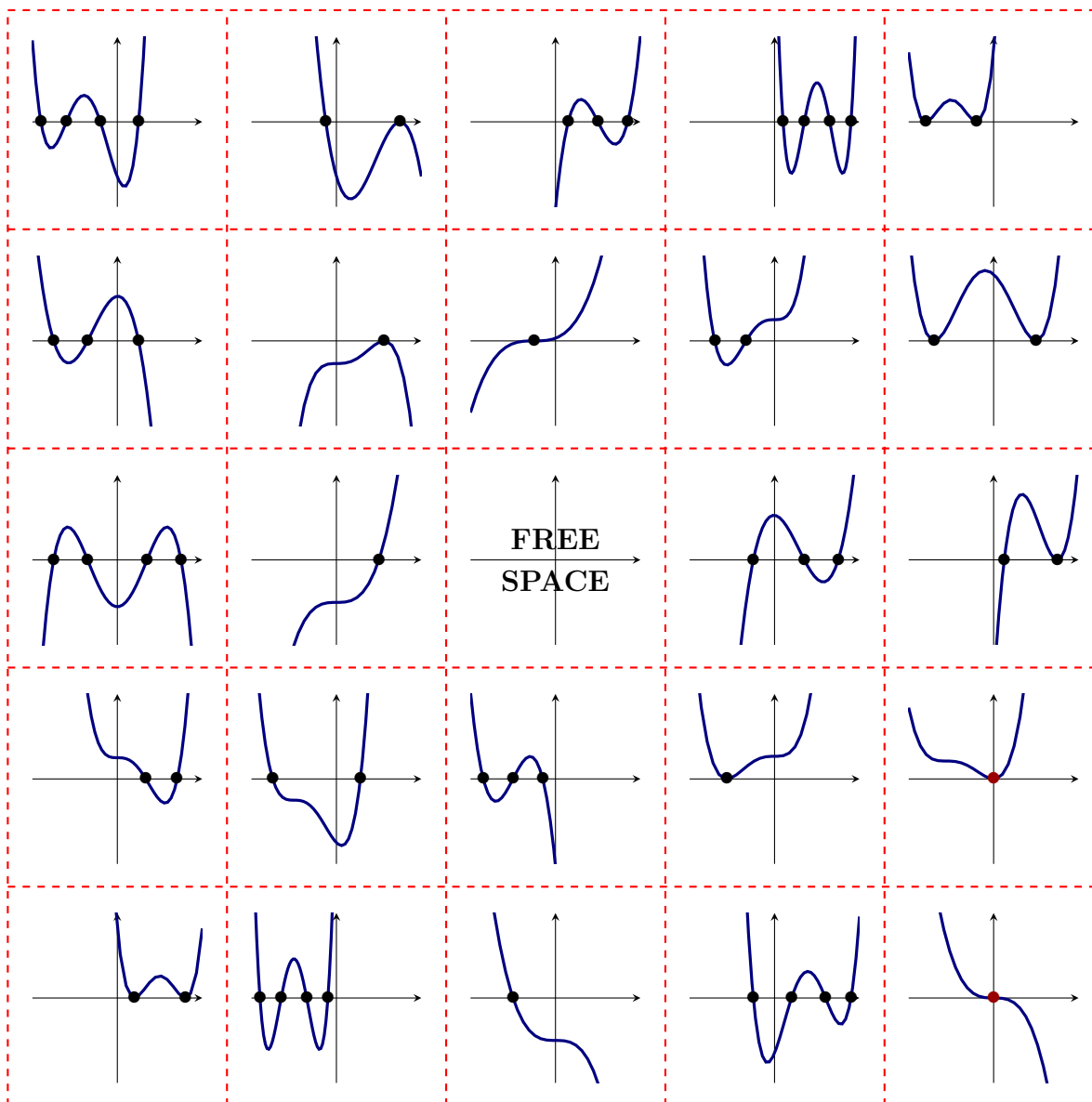
# Zero Bingo Card 75



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

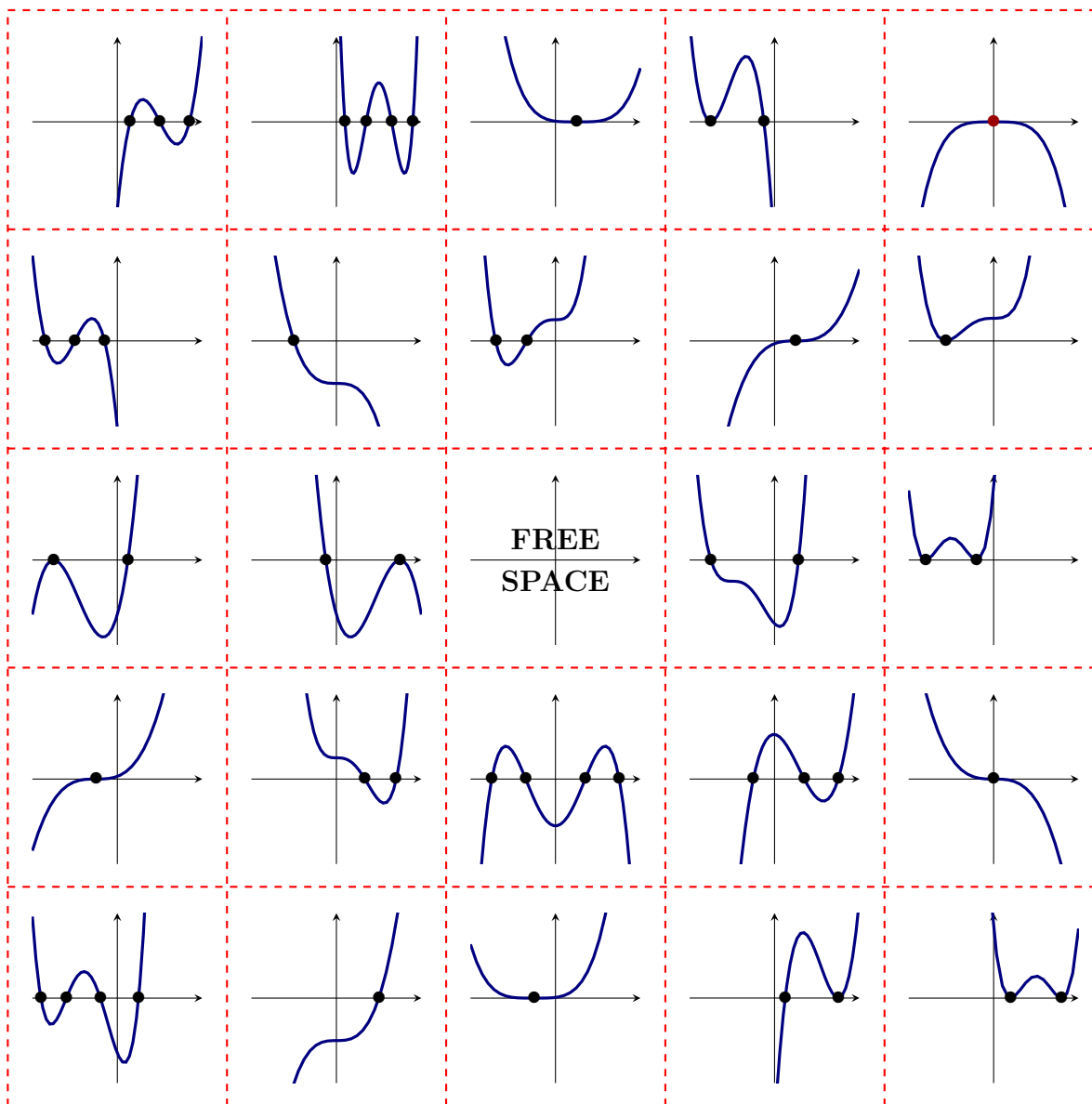
# Zero Bingo Card 76



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

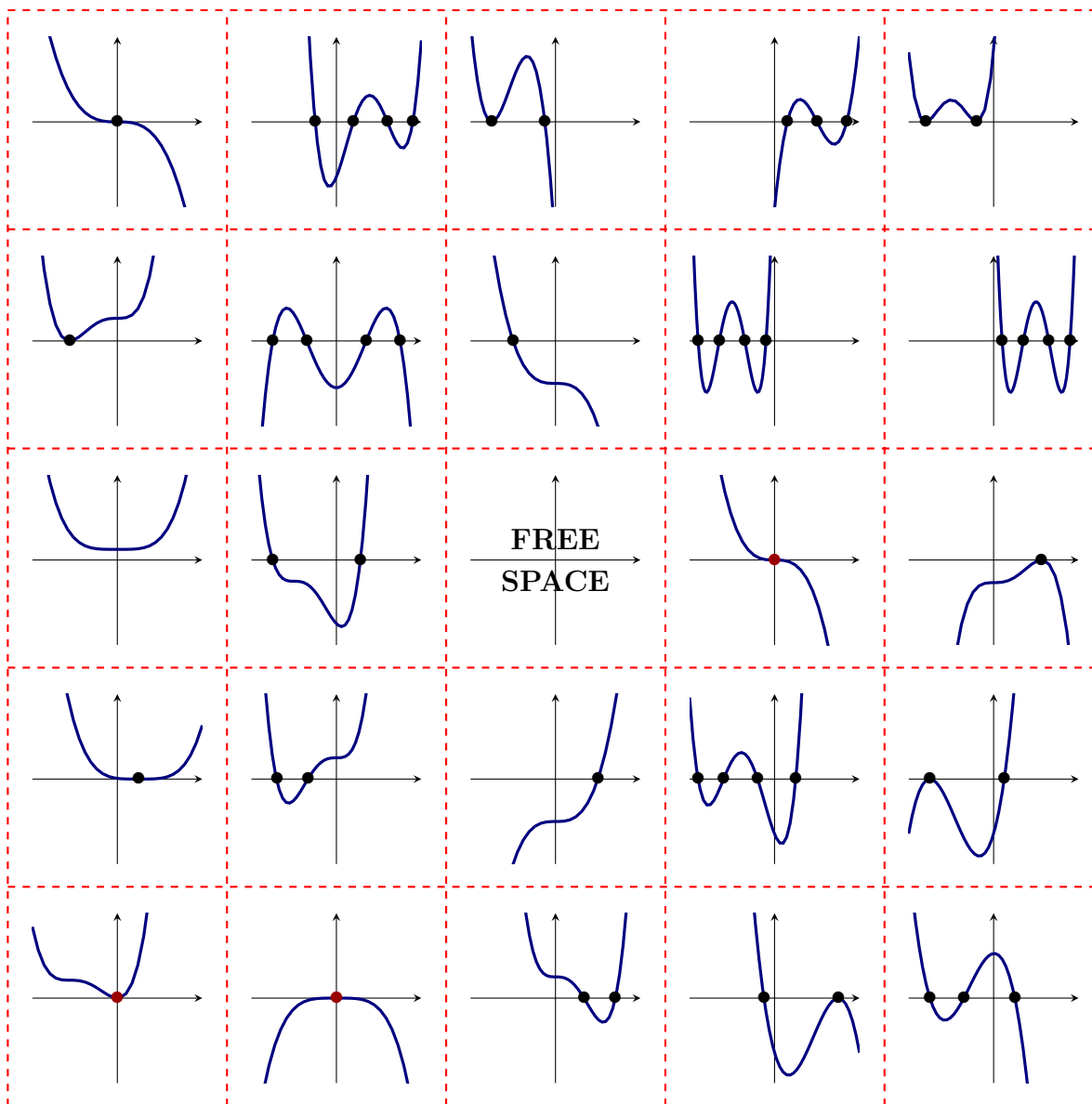
# Zero Bingo Card 77



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

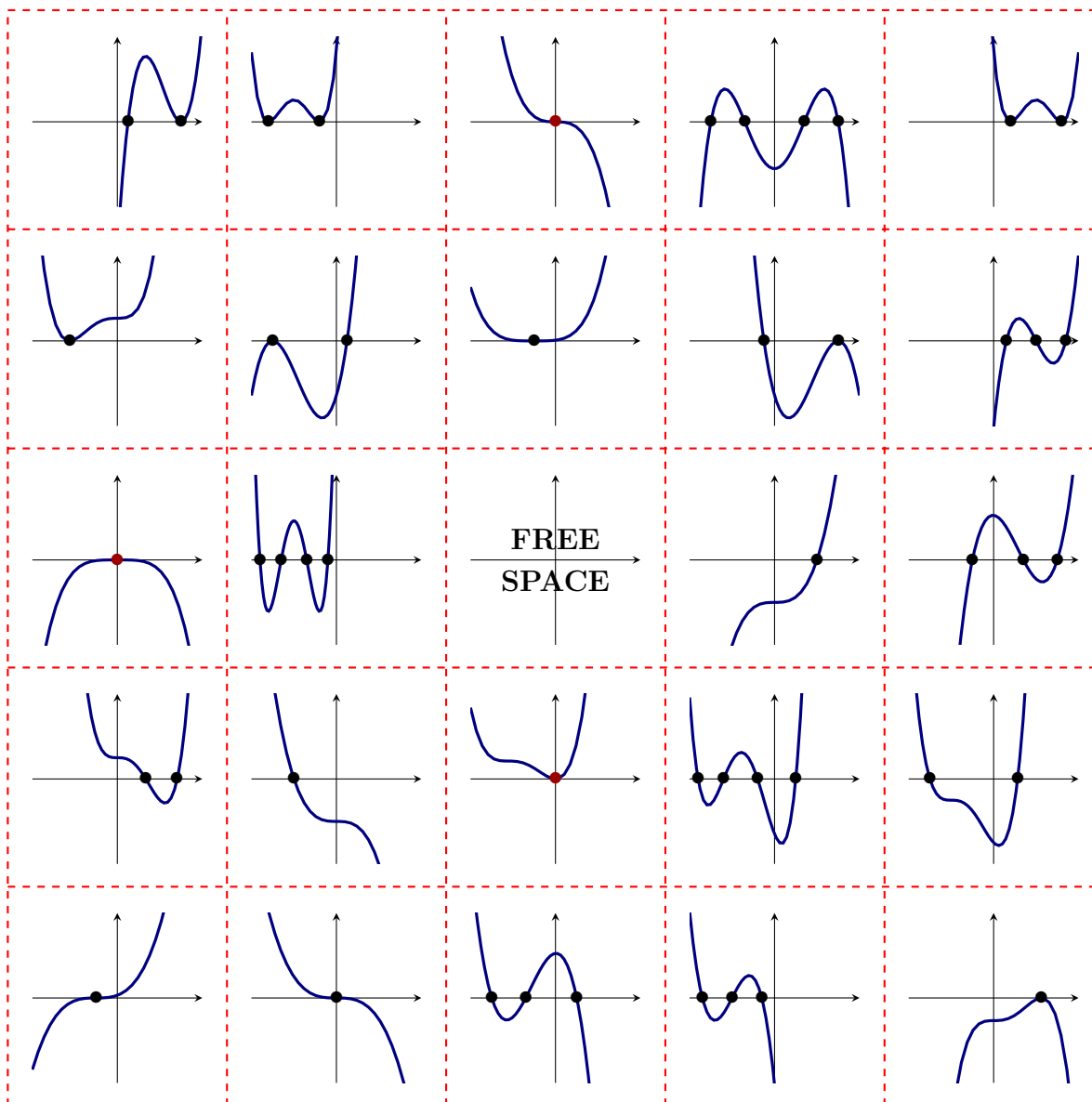
# Zero Bingo Card 78



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

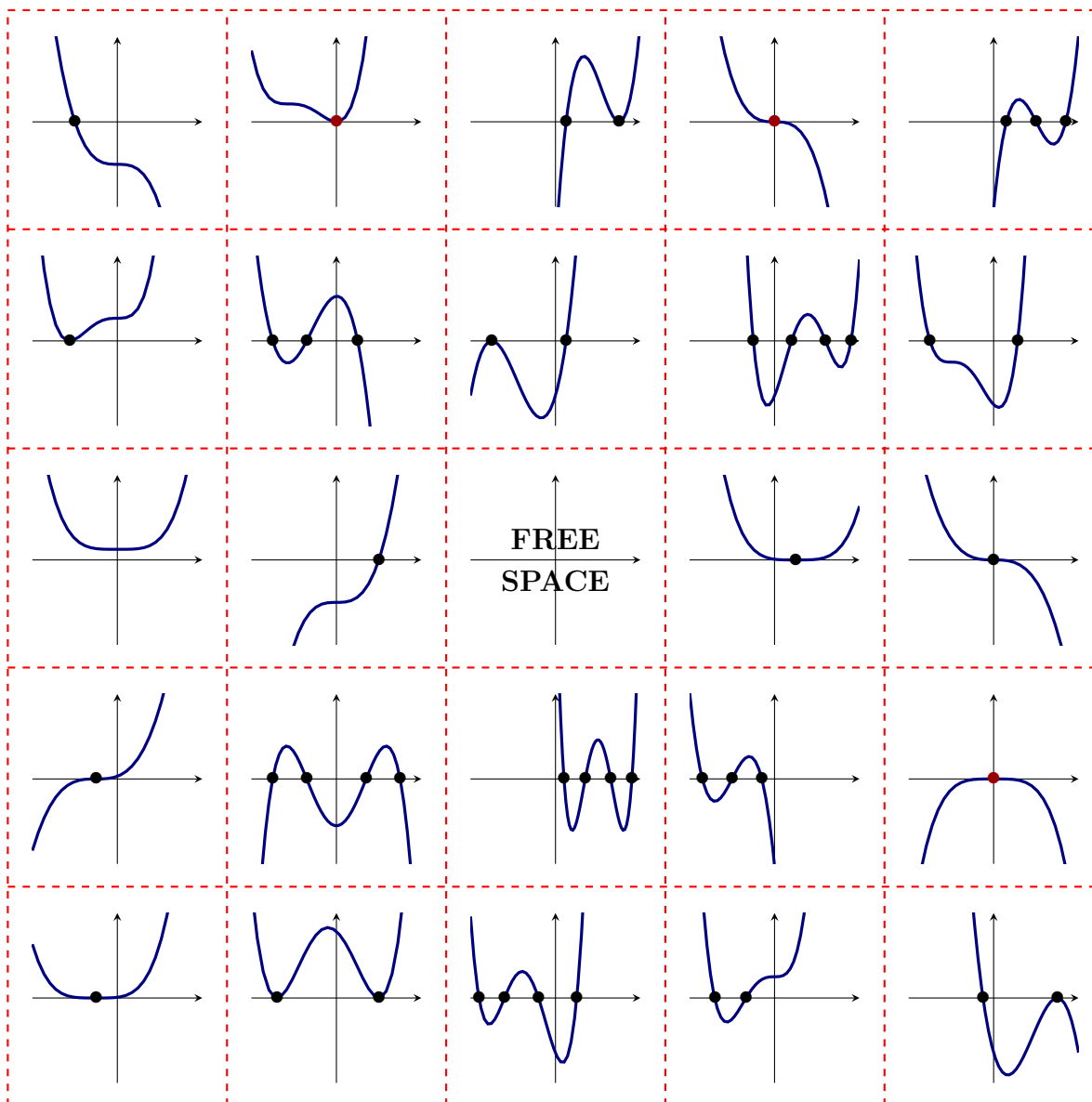
# Zero Bingo Card 79



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

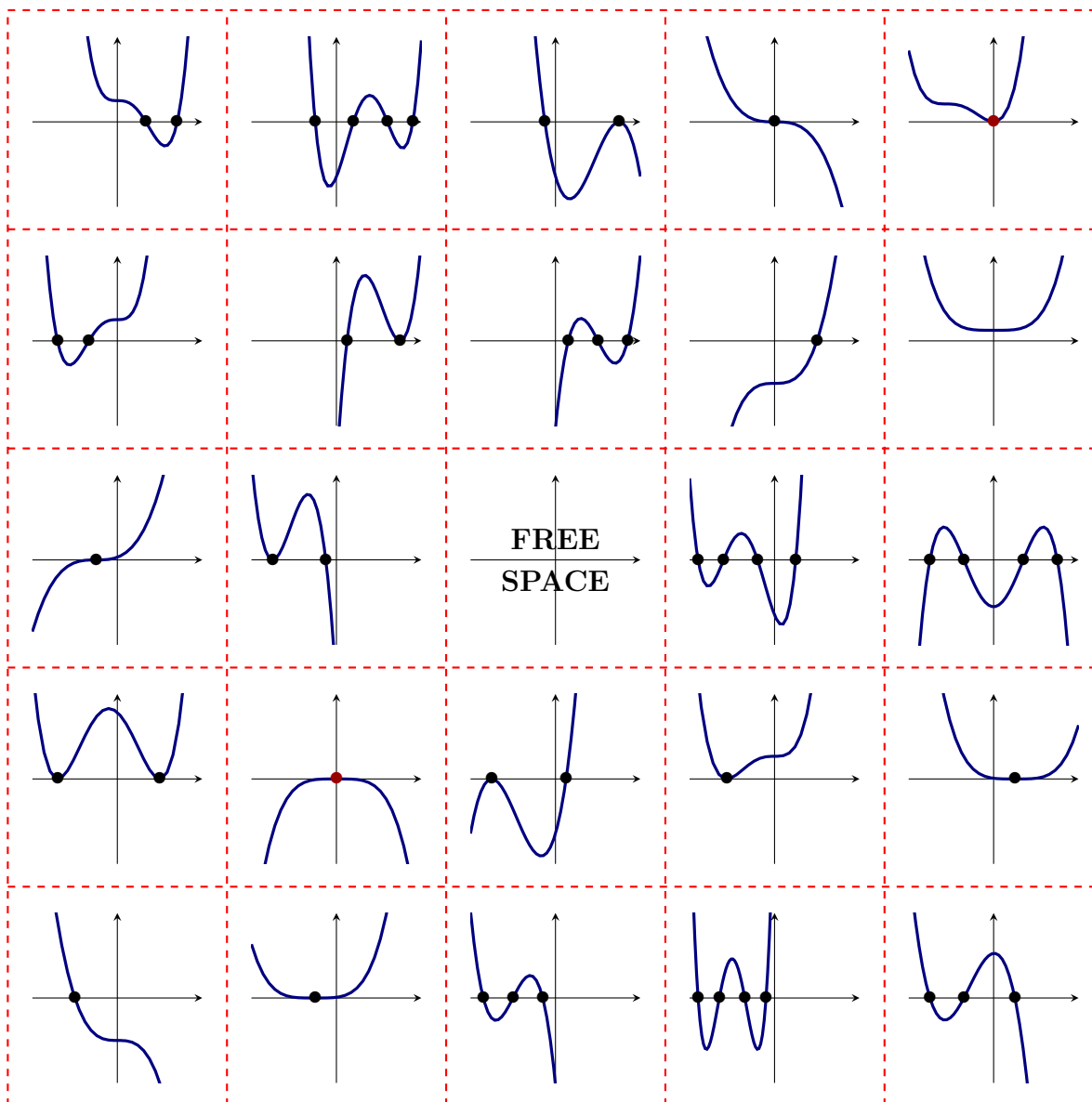
# Zero Bingo Card 80



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

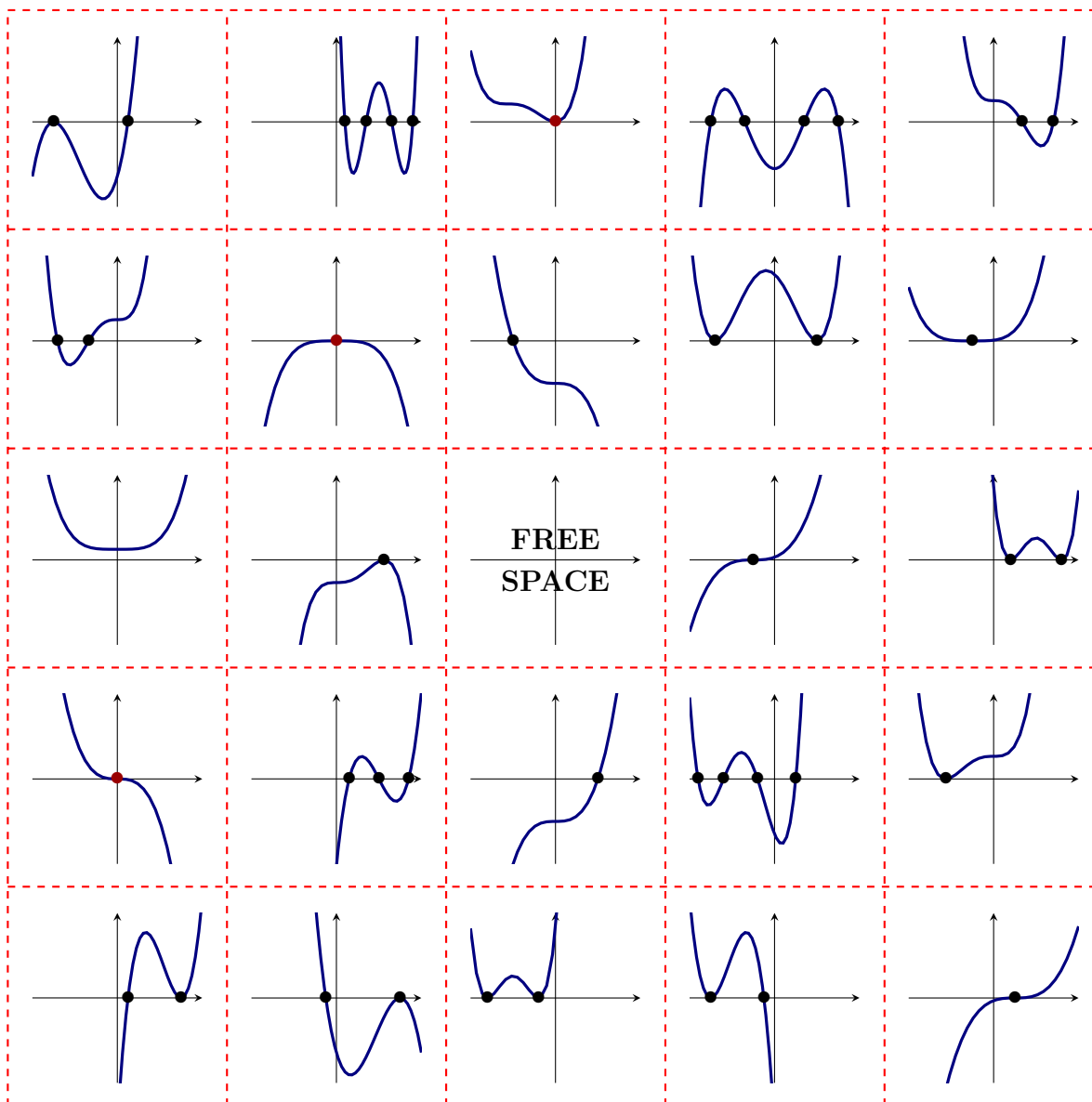
# Zero Bingo Card 81



Each polynomial on this card has degree three or four. All real zeros are shown.

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# Zero Bingo Card 82

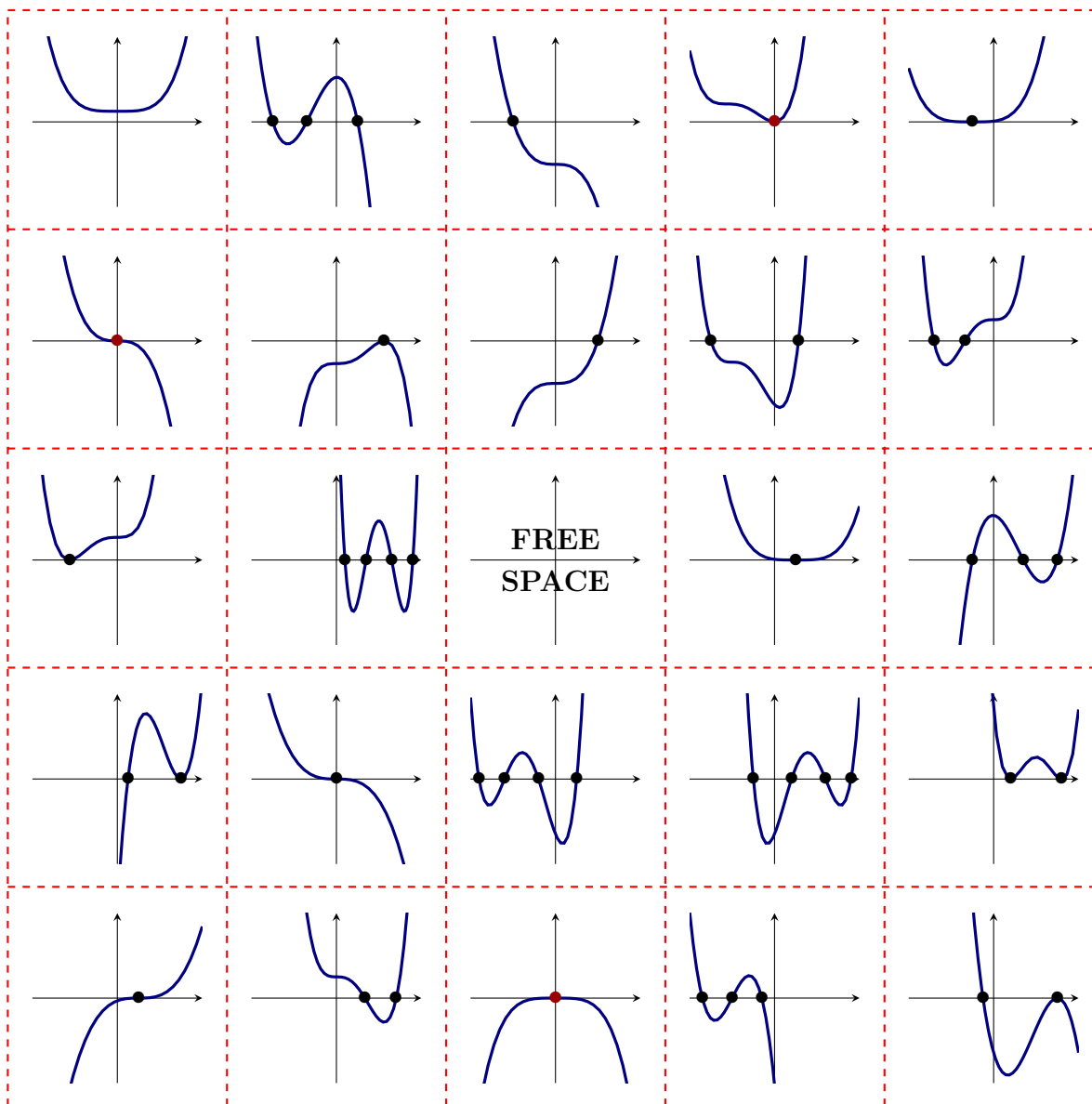


Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016



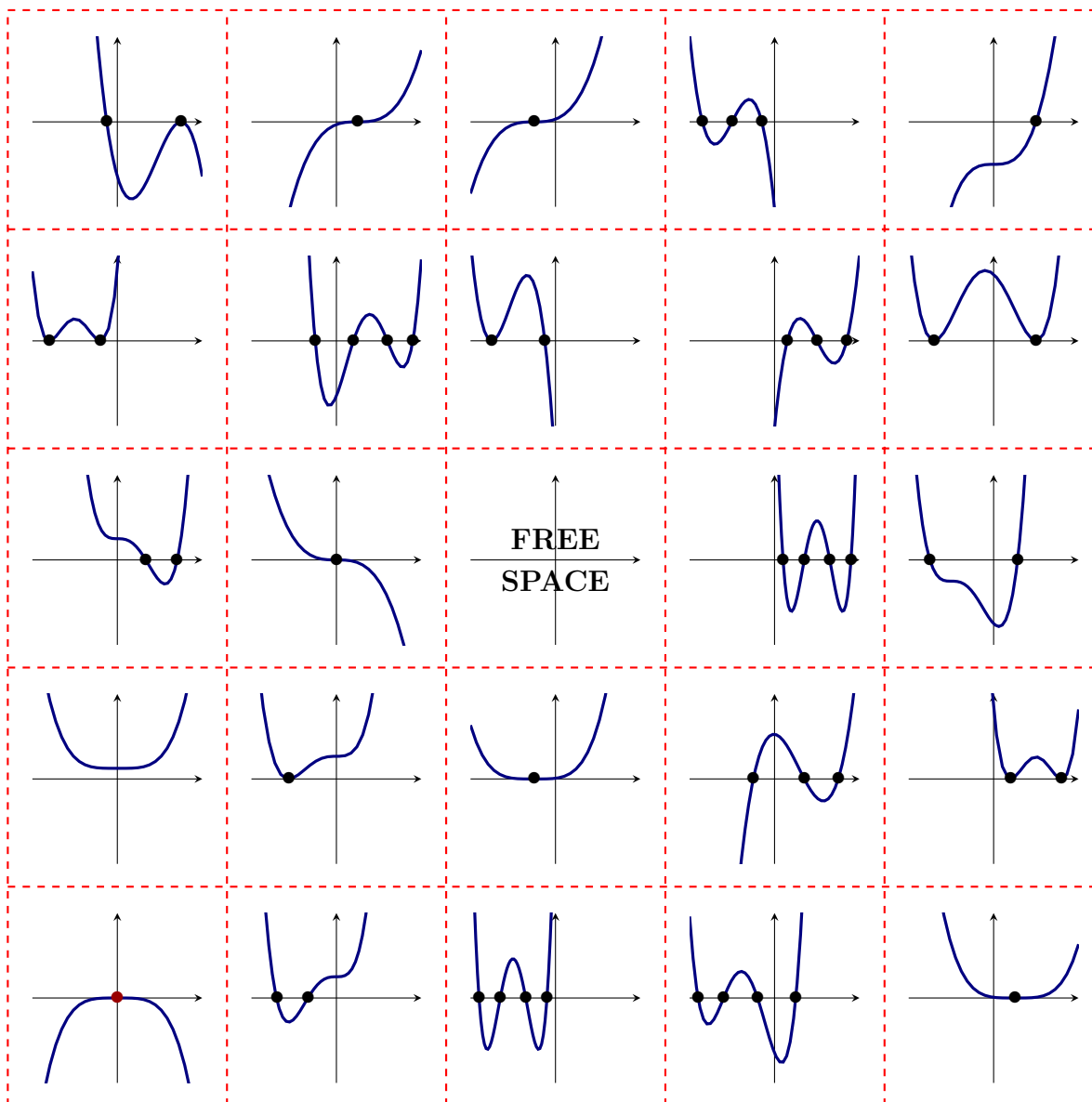
# Zero Bingo Card 83



Each polynomial on this card has degree three or four. All real zeros are shown.

Chris K. Caldwell © 2016

# Zero Bingo Card 84



Each polynomial on this card has degree three or four. All real zeros are shown.

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